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DISEASES CAUSED BY BACTERIA AND FUNGI

JENSEN, P. T. (1957). Undersøgelser over Whiteside-prøven og C. M. T.-prøven til påvisning af mastitissekret i leverandørmaelk. [Studies of the Whiteside and California tests for the detection of mastitis in herd milk samples.]—*Nord. VetMed.* 9, 590-608. [In Danish. Summaries in English and German.] **2714**

The "California" milk test [*V.B.* 27, 2881] was compared with the Whiteside test on bulk samples of milk from 122 herds. Tests were followed by clinical examination of all herds and it was demonstrated that the California test gave the more reliable results.—R.M.

THÖRNE, H. (1958). The antistaphylococcal titre in cattle, with special reference to chronic staphylococcal mastitis.—*Nord. VetMed.* 10, 63-75. [In English. Summaries in German and Swedish.] **2715**

In 3 herds with no clinical or bacteriological signs of staphylococcal mastitis the antistaphylococcal titres were generally low (less than 0·36-1·4 units/ml.). In 3 other herds, with staphylococcal mastitis, the titres ranged widely (less than 0·36-44 units/ml.). A relationship was observed between clinical and bacteriological signs of staphylococcal mastitis and increased antistaphylococcal titres.—M.G.G.

BARR, F. S., HARRIS, J. R. & CARMAN, P. E. (1958). Intramuscular treatment of staphylococcal mastitis with neomycin sulfate and polymyxin B sulfate.—*J. Amer. vet. med. Ass.* 132, 110-111. **2716**

A combined injection of neomycin sulphate (1 g.) and polymyxin B (1 megaunit), given i/m on each of two successive days, cured in 8 out of 9 cows staphylococcal mastitis which had proved resistant to other antibiotics. Sensitivity tests showed that neomycin alone would have been effective here.—G. P. MARSHALL.

DERBYSHIRE, J. B. (1958). The experimental production of staphylococcal mastitis in the

goat.—*J. comp. Path.* 68, 232-241. [Author's conclusions modified.] **2717**

Mastitis was produced in 11 of 12 goats inoculated into the teat canal of one side of the udder with varying numbers of living *Staph. aureus* Strain 201. Inoculation was followed by a systemic reaction and local udder changes varying from mild inflammation to rapidly developing gangrene. The inoculation of sterile broth into the teat canal of two goats caused no systemic reaction, and only minimal changes in the milk. Heat-killed staphylococcal cultures, heat-killed staphylococci suspended in broth and Chamberland L2 filtrate of whole culture, each inoculated into two goats, caused a transient systemic reaction and slight abnormalities in the milk.

A marked neutropenia with shift to the left rapidly developed after the inoculation of living staphylococci and a similar, but less marked change, occurred when killed culture or filtrate was inoculated. *Staph. aureus* was never recovered from the spleen after death and was recovered from the supramammary lymph node of one goat only, killed *in extremis* three days after inoculation.

LUCAS, A., DURIEUX, J., DURIEUX, M. & MIRIAL, G. (1957). Tuberculose du cheval à bacille de Koch de type humain. [Tuberculosis in horses caused by human type tubercle bacilli.]—*Rec. Méd. vét.* 133, 479-482. **2718**

An account of two cases.—R.M.

ULLMANN, G. (1957). Infektionen anerkannt tuberkulosefreier Rinderbestände durch Menschen. [Infection of tuberculosis free herds by human beings.]—*Rindertuberk. u. Brucellose* 6, 102-106. **2719**

A tuberculin test of a herd of 75 cattle which had passed a previous test revealed 39 reactors. A month later 45 cattle reacted. The cowman and a milker had TB. [presumably of human type] and it was believed that they had infected the cattle. There was no attempt to type the

organism in cattle which reacted to the test. U. stated that there were other instances of the same type of occurrence in TB-free herds in the same locality.—R.M.

LEROUX, P. L. (1958). Bone tuberculosis in the red lechwe (*Adenota leche*) in Northern Rhodesia.—*Trans. R. Soc. trop. Med. Hyg.* **52**, 15. **2720**

The author demonstrated a case of bone TB. in a red lechwe from a game and bird sanctuary in Northern Rhodesia. The lechwe had been in very poor condition and affected with partial paralysis of the hind legs. Tuberculous lesions were present in the body of a vertebra and in the neural canal, in the periosteum of the tibia, in a sternal lymph node and a portion of lung.

The reserve is stated to be much overstocked with these animals which are consequently in poor condition and heavily parasitized. The author associates the distribution of the tuberculous lesions with the migrations of oestrid larvae which were numerous. Lungworms, blood flukes, a hookworm and several species of gastro-intestinal worms, *Onchocerca*, *Setaria* and paramphistomids were also present.

The author concludes "Game conservation as practised in some parts of Africa will lead to the extermination of the animals by contagious and infectious diseases. There are unfortunately parasitologists who maintain that wild animals should by now have established harmonious relationship with their parasites".

—R. N. FIENNES.

SPECK, J (1957). Erfahrungen mit dem Antigen "Dessau" bei der Diagnose der Rindertuberkulose mittels der Hämagglutinationsreaktion nach Middlebrook und Dubos. [Experience of "Dessau" antigen in the haemagglutination test for bovine TB.]—*Arch. exp. VetMed.* **11**, 190-197. **2721**

Tests on 130 slaughter cattle revealed that an antigen prepared at the Forschungsinstitut für Impfstoffe in Dessau gave satisfactory results. For the eradication of TB. the author recommended slaughter of cattle having haemagglutination titres of 1:160 and above. The test only detected severe, active infection.—R.M.

SCHUSTER, E. (1957). Paperelektrophoretische Untersuchungen an normalen und tuberkulösen Milchseren. [Paper electrophoresis of whey samples from healthy and tuberculous cows.]—*Mh. VetMed.* **12**, 258-261. **2722**

Whey from 20 normal cows and from cows with mammary TB. was examined electrophor-

etically. In tuberculous cattle the fractions carrying immune globulins were higher than normal and the fractions of the β -lactoglobulin complex were lower than normal.—R.M.

ZACHER, J. (1957). Das Pilzstadium (die mykide Phase) der Tuberkuloseerreger, insonderheit des Mycob. tuberculosis, var. bovis (Typus bovinus). [Mycoid phase of tubercle bacilli, particularly of the bovine type.]—*Arch. exp. VetMed.* **11**, 171-189. **2723**

Filamentous (or "mycelial") forms were seen in carefully prepared stained smears of cultures on Petragnani or Witte media of bovine type tubercle bacilli. The forms were present in 4 of 6 strains studied (12 photomicrographs).

—R.M.

VUILLAUME, P. (1957). Prophylaxie de la tuberculose bovine et B.C.G. [B.C.G. in prevention of bovine tuberculosis.]—*Rev. Path. gén.* **57**, 1681-1688. Discussion: pp. 1688-1691. [Summaries in English and Spanish.] **2724**

The author explained why it was better and cheaper to control bovine TB. by the slaughter of tuberculous animals than by large-scale vaccination with B.C.G. under conditions prevailing in France.—R.M.

GASTALDI, C. (1957). Influenza di alterazioni metaboliche sulla recettività del topino al BCG. [Effect of dietary changes on the susceptibility of mice to B.C.G.]—*Boll. Ist. sieroter. Milano* **36**, 363-371. [Summary in English.] **2725**

In mice on a diet containing sodium citrate weight gains were lower and susceptibility to B.C.G. was higher than in mice on a normal diet. The increased susceptibility to B.C.G. is attributed to lowered tissue resistance caused by metabolic disturbances.—T.E.G.R.

WEINHOLD, E. (1957). Zur serologischen Diagnostik der Hundetuberkulose. [Serological diagnosis of tuberculosis in dogs.]—*Dtsch. tierärztl. Wschr.* **64**, 424-428. **2726**

W. used the haemagglutination-haemolysis test of Middlebrook & Dubos and the complement-fixation test on sera from 20 tuberculous and 328 non-tuberculous dogs. Of the latter, 321 gave negative haemagglutination and 320 gave negative haemolysis. 15 of the TB. dogs were detected by these tests and 8 by complement fixation; 3 of 4 dogs with generalized TB. were negative to all tests but all 10 dogs with pulmonary TB. gave positive haemagglutination and haemolysis.—R.M.

BIGNOZZI, L. & TRENTI, F. (1957). La sindrome di P. Marie-Bamberger in patologia comparata. Regressione delle manifestazioni osteoperiostali in un cane con tubercolosi toracica trattato con streptomicina e I.N.I. [Hypertrophic osteoarthropathy associated with pulmonary tuberculosis in a dog; treatment with streptomycin and isoniazid.]—*Vet. Ital.* 8, 979-1031. [Summaries in English, French and German.]

2727

Literature on secondary hypertrophic osteoarthropathy is reviewed and an account of the condition, associated with pulmonary TB., in a dog is given. All four legs were affected, the lower half of each limb being swollen and movement of the joints restricted by oedema of the surrounding tissues. A ridge of bony consistency was present on each radius. Radiological examination revealed thickening and changes in density of the lower third of the bones. Treatment with streptomycin and isoniazid over five periods of 40 days each separated by intervals of 10 days effected a clinical cure of the pulmonary affection and resolution of the limb lesions.—T.E.G.R.

STETSON, C., JR., SCHLOSSMAN, S. & BENACERAF, B. (1958). Endotoxin-like effects of Old Tuberculin. — *Fed. Proc.* 17, 536. [Authors' abst. modified.]

2728

Normal rabbits, injected intravenously with large doses of Old Tuberculin (O.T.), exhibited biphasic febrile responses characteristic of those produced by bacterial endotoxins. O.T. did not produce fever in rabbits rendered "tolerant" to *E. coli* endotoxin, while reticulo-endothelial blockade in such rabbits restored susceptibility to both *E. coli* endotoxin and O.T. In addition, O.T. produced other endotoxin-like effects in normal rabbits. Each of the several preparations tested possessed an activity corresponding to an endotoxin content of the order of several µg. per ml. Since tuberculin-sensitive guinea-pigs are also hypersusceptible to bacterial endotoxins, it seemed possible that the well-known systemic effects of O.T. in sensitized animals might be due to endotoxin rather than to a specific systemic hypersensitivity reaction. To test this hypothesis, 35 guinea-pigs were sensitized with killed human tubercle bacilli in oil, and 17 of these were made "tolerant" to *E. coli* endotoxin by a series of i/v injections. All (protected against anaphylaxis with promethazine) were then challenged with a 50% lethal dose of O.T. intravenously. Ten of the 18 controls died in tuberculin shock, while only 1 of the 17 "tolerant" animals died, this one with symptoms of anaphylactic rather than delayed shock. It is concluded that

some of the features of tuberculin shock are due to the endotoxin-like properties of Old Tuberculin.

KONNO, K., KURZMANN, R., BIRD, K. T. & SBARRA, A. (1958). Differentiation of human tubercle bacilli from atypical acid-fast bacilli. I. Niacin production of human tubercle bacilli and atypical acid-fast bacilli.—*Amer. Rev. Tuberc.* 77, 669-674. [Summaries in French and Spanish.]

2729

The amount of niacin produced by human type tubercle bacilli growing on solid medium was much higher than that produced by atypical acid-fast bacteria growing under the same conditions. Three methods for measuring niacin production were described.—R.M.

BOEHME, D. & DUBOS, R. J. (1958). The effect of bacterial constituents on the resistance of mice to heterologous infection and on the activity of their reticulo-endothelial system.—*J. exp. Med.* 107, 523-536. [Authors' summary modified.]

2730

Administration of small amounts of salmonella endotoxin (20 µg.) or of acetone-extracted B.C.G. cells (100 µg.) increases the resistance of mice to infection with *Mycobacterium fortuitum* as well as their ability to clear carbon particles from their blood stream. Whereas the increased resistance to infection persists for many weeks, the clearing power returns to normal within a few days.

When normal mice are infected with *M. fortuitum*, there occurs during the first phase of the infective process a rise in clearing power for carbon particles followed by a fall during the terminal phase of the disease. The rise occurs more rapidly and is more pronounced in animals previously treated with salmonella endotoxin or with killed B.C.G. cells. This acceleration and intensification of the phagocytic response to infection can be detected even in animals which exhibit a normal phagocytic index several weeks after administration of endotoxin or of B.C.G.

Although increase in resistance to infection is correlated with activation of the reticulo-endothelial system, there is no evidence of any direct causal relationship between the two phenomena.

TOLHURST, J. C. (1958). The effect of the medium on the cultivation of *Mycobacterium balnei* at 37°.—*J. gen. Microbiol.* 18, 295-301. [Author's summary modified.]

2731

M. balnei grows best at temperatures about 32°C. Growth occurs at 37° only on certain media. The organism is more susceptible at 37° than at 32° to the inhibitory effects of oleic acid

added to a simple defined medium. This appears to explain the failure of more complex media to support growth at the higher temperature.

RANKIN, J. D. (1958). The complement-fixation test in the diagnosis of Johne's disease in cattle.—*Vet. Rec.* 70, 383-388. [Author's summary modified.]

2732

Results of the c.f. test for Johne's disease were repeatable within practical limits of accuracy. Although minor variations occurred, no positive animal became negative in a repeated test, or vice versa. In calves c.f. antibodies were not demonstrated in the sera until at least 3 weeks after experimental infection. Of 28 cattle with Johne's disease 27 gave a positive reaction. In the exceptional case the course of the disease from infection to death was extremely rapid (7 months). Titre appeared to be directly related to the extent of the intestinal lesions and not necessarily to the severity of the symptoms. In a sample of cattle believed to be free from contact with *Mycobacterium johnei* 96% were negative. The mere presence of *M. johnei* was not sufficient to give a positive reaction: the test frequently failed to diagnose carrier animals. Between 10 and 20% of the adult cattle were positive on two farms free from the disease. On a farm where the infection exists but is not a serious problem up to 40% of the adult cattle were positive. It is postulated that some form of non-specific activity which this test detects can occur in a herd, but that the effect of this activity is transient.

DOYLE, T. M. (1958). Foetal infection in Johne's disease.—*Vet. Rec.* 70, 238. [Author's summary modified.]

2733

Acid-alcohol-fast bacilli, indistinguishable morphologically and culturally from *Mycobacterium johnei* were isolated from the spleen, liver, and foetal membranes of foetuses from cows clinically affected with Johne's disease. Two calves inoculated with cultures of acid-fast bacilli isolated from a foetal spleen and a cotyledon, respectively, developed clinical Johne's disease.

I. STROGOV, A. K. (1957). [Paratuberculosis in camels.]—*Trud. vsesoyuz. Inst. eksp. Vet.* 20, 120-131. [In Russian.]

2734

II. IVANOV, B. G. & SKALINSKII, E. I. (1957). [Pathological changes in paratuberculosis of camels.]—*Ibid.* 186-206. [In Russian.]

2735

I. In the U.S.S.R. *Mycobact. johnei* infection has been known to occur in camels in Turkmenistan since 1949. Symptoms and lesions were similar to those of the disease in cattle. Incidence was highest in camels aged 2 or 3

years and the disease was rare in younger animals. An experiment was conducted to determine if early weaning, in summer when herbage was best, increased the resistance of camels to Johne's disease: within two years 2 of 99 camels weaned early developed the disease, compared with 14 of 430 weaned normally in autumn. From 1946 to 1952 the annual incidence varied from 0·3-1·54% of all camels; incidence was highest in the winter-spring period. Johne's disease was not observed in sheep in contact with infected camels.

Double intradermal tests with avian tuberculin were performed, and in some herds as many as 40% of camels gave positive reactions (increase of skin thickness by 7 mm. or more). No acid-fast organisms were seen in smears of faeces or rectal mucosa from 600 positive or doubtful reactors. 7 apparently healthy reactors were slaughtered and no evidence of Johne's disease was found. Only 2 of 11 confirmed clinical cases reacted to avian tuberculin, and one of the two gave a doubtful reaction. It was concluded that positive reactions may be due to echinococcus infestation. Control of the disease was based on protection from infected animals and increasing natural resistance to infection by good feeding.

II. Lesions were generally more severe than those occurring in Johne's disease in cattle; this corresponded with the more rapid course of the disease in camels, death often occurring after 4-6 weeks' illness. Typical lesions were most frequent in the ileum, caecum and colon. Inflammatory changes in the liver, spleen and lymph nodes were also present.—R.M.

RANKIN, J. D. (1958). The experimental production of Johne's disease in laboratory rabbits.—*J. Path. Bact.* 75, 363-366. [Author's summary modified.]

2736

Intestinal lesions of Johne's disease were produced in five out of eight rabbits by inoculating them i/v when two weeks old with cultures of *Mycobacterium johnei*. Three of the five rabbits developed the disease in its clinical form; the incubation period ranged from 7 to 14 months.

WIIDIK, R. W. (1958). Weitere Untersuchungen über den schwedischen avirulenten Rotlaufimpfstoff AV/R9. [Further investigations into the Swedish avirulent swine erysipelas vaccine AV/R9.]—*Zbl. VetMed.* 5, 1-16. [Summaries in English, French and Spanish. English summary modified.]

2737

To determine the potency of this vaccine a provisional potency test in mice is proposed. Swine-erysipelas immune serum in combination

with the vaccine prevented the development of active immunity. Vaccination during the incubation period did not seem to accelerate the course of the infection nor increase the virulence of virulent *E. rhusiopathiae* in mice. When stored in the dark, at +10° C. or at room temp., the vaccine retained its potency for longer periods than has hitherto been suggested. Extension of the expiration-date is proposed.

ZELLER, M. & MAYER, H. (1957). Feststellung von Listeria monocytogenes bei Schweinepest. [Isolation of *E. monocytogenes* from pigs with swine fever.]—*Berl. Münch. tierärztl. Wschr.* 70, 302-303. [Summary in English.] **2738**

Listeria of serological type IVb were isolated from 2 of 5 pigs which had died from swine fever. Agglutinins to *E. monocytogenes* were present in sera from 7 of 10 surviving pigs in the same herd. The finding of listeria was accidental and no relationship between the two diseases was suggested.—R.M.

SUCHANOVÁ, M., MENČIKOVÁ, E., PATOČKA, F. & BENEŠOVÁ, D. (1958). Experimentelle Listeriose der Kaninchen. Verlauf der experimentellen Infektion und Studium ihrer Übertragung von der Mutter auf die Frucht. [Experimental listeria infection in rabbits.] — *Zbl. Bakt. I. (Orig.)* 170, 547-564. [Summaries in English, French, Spanish and Russian.] **2739**

The course of experimental listeriosis in pregnant and non-pregnant rabbits was studied. *E. monocytogenes* was administered in collodion capsules into the subcutaneous tissue of the abdomen. In non-pregnant rabbits there arose only a local inflammatory reaction without any signs of a general affection and mostly without producing complement-fixing antibodies and leucocytosis. In the lungs of an infected male granular forms of listeria were found enclosed intracellularly in histiocytes.

In 8 of 11 pregnant rabbits listeria organisms had penetrated into the placenta without any significant bacteraemia being present. In three cases no pathological changes had occurred in the placenta, uterus and foetuses although listeria was isolated by cultivation therefrom. In the rest of the rabbits changes were found mostly in the placenta and embryos. The disease manifested itself clinically only when there were pathological changes in the uterus. Listeria had an extraordinary affinity for placental tissue, and were able to penetrate an intact barrier of uterine tissues. The penetration through the placental syncytium was probably facilitated by the so-called anaemic infarcts which appear physiologically in the second half of pregnancy.

But their presence is not essential for listeria to penetrate into the placenta. It is probable that in this process minute and even filtrable forms of listeria, whose presence has been verified in simultaneous experiments, are also of significance. The uterus is attacked secondarily from the placenta.—R.M.

BENITO, M. & BORREL, A. (1957). Pseudotuberculose à *Cillopasturella* chez le chinchilla. [Pseudotuberculosis in the chinchilla.] — *Bull. Acad. vét. Fr.* 30, 363-369. **2740**

P.M. findings in a chinchilla included pulmonary oedema and emphysema, dark myocardium, slight gastritis, severe haemorrhagic enteritis (particularly in the colon which contained small multiple foci of necrosis), enlargement of the associated lymph nodes, congested liver with numerous small yellowish nodules, enlarged spleen with similar nodules, slight hyperaemia of the kidneys, deep congestion of the medullary zone of the adrenal glands and a clear fluid in the abdominal cavity. Some *Giardia* were observed in the intestinal contents and Gram-variable bipolar coccobacilli were demonstrated in smears of the liver nodules. An organism designated *Cillopasturella* and having characters different from *Pasteurella* was isolated in pure culture from the nodules.

—T.E.G.R.

NIGGLI, H. B. (1957). Kerato-Conjunctivitis infectiosa bovis im Irak. [Infectious keratoconjunctivitis of cattle in Iraq.] — *Schweiz. Arch. Tierheilk.* 99, 584-601. [Summaries in English, French and Italian.] **2741**

A clinical and serological study of 20 cases. —R.M.

EWING, W. H., TATUM, H. W. & DAVIS, B. R. (1958). *Escherichia coli* serotypes associated with edema disease of swine.—*Cornell Vet.* 48, 201-206. [Authors' summary modified.] **2742**

The results of serological studies with 38 cultures of *E. coli* isolated in Ireland and the U.S.A. from oedema disease of swine are reported. Serotypes belonging to two *E. coli* groups O138:K81(B) and O139:K82(B), occurred most frequently and in both countries. *E. coli* O groups 138 and 139 and K antigens 81(B) and 82(B) represent new additions to the *E. coli* antigenic schema.

MURPHY, T. & RYAN, M. A. (1958). The use of *E. coli* antiserum in agalactia, associated with post parturient fever syndrome in sows.—*Irish vet. J.* 12, 51-57. [Authors' summary modified.] **2743**

The widespread occurrence of agalactia associated with the postparturient fever syndrome in recently farrowed sows on one farm is described. Changes in feeding and management practices were ineffective in preventing the disease. Treatment with sulphadimidine, chorionic gonadotrophin and antibiotics both before and after farrowing was without effect. An *E. coli* organism was isolated from the vagina of sows and a strain with similar serological and biochemical characters was isolated from a scouring piglet. Immune serum containing agglutinins to the "L" antigen of the strain isolated, was effective in preventing the condition in sows and was also effective for a period in the treatment of scouring piglets. When such piglets failed to respond to serum treatment, an *E. coli* strain, serologically distinct from that previously found and failing to agglutinate with the immune serum, was isolated. Attempts to demonstrate venereal spread of the condition were unsuccessful.

ROGERS, D. E. & MELLY, M. A. (1958). Studies on bacteraemia. IV. Alterations in rabbit mortality associated with aging of a culture of Escherichia coli.—*J. exp. Med.* **107, 561-580. [Authors' summary modified.]**

2744

Rabbits given an i/v injection of an 18 to 24-hour broth culture of *E. coli* commonly died within 28 hours. The injection of a 4 hour broth culture of the same strain of *E. coli* containing equal numbers of living bacilli produced only an occasional death.

Initial clearance rate and subsequent degree of bacteraemia were similar in animals receiving either culture. Study of changes in circulating leucocytes or the temperature response to washed bacterial cells or culture filtrates revealed no obvious differences in host response to young or old cultures.

Both living bacterial cells and some substance or substances present in culture filtrates were required to produce death. The injection of whole old cultures containing both these factors produced hypothermia instead of the endotoxin type fever response which followed the injection of whole young cultures.

Subsequent experiments revealed that this hypothermia appeared to be secondary to a period of transient but profound shock which occurred soon after the injection in rabbits receiving old cultures. No significant alterations in arterial pressure accompanied injections of young cultures.

Evidence is presented which suggests that this period of hypotension rendered animals more likely to die with a persisting bacteraemia

tolerated without event by non-shocked animals. The mechanisms which increase mortality during the post shock period are not yet clear.

ALVES DE OLIVEIRA, J. J. (1957). Salmonella. Leur isolement dans les farines destinées à l'alimentation des animaux. [Isolation of salmonella from animal feeding stuffs.]—*Bull. Off. int. Epiz.* **48, 336-345. [Summary in English.]**

2745

The author lists salmonella serotypes isolated from whale, meat and fish meals examined in Lisbon.—R.M.

BARTMANN, E. (1957). Über das Vorkommen der Salmonella abortus ovis in den weiblichen und männlichen Geschlechtsorganen und im Euter des Schafes. [Occurrence of *Salmonella abortus-ovis* in the male and female genital organs and in the udder of sheep.]—*Inaug. Diss., Munich* pp. 36.

2746

B. tested various culture media and found that phenol-red agar containing 0·9 ml./l. of a 1:1,000 soln. of brilliant green was the best for the selective isolation of *S. abortus-ovis*. He examined 400 uteri, 250 ovaries and 200 udders from slaughtered ewes and testicles from 220 rams. The organism was only isolated from testicles of 7 rams, 4 of which were sexually immature. This finding demonstrated the importance of rams in the transmission of *S. abortus-ovis* infection.—R.M.

BLAXLAND, J. D., SOJKA, W. J. & SMITHER, A. M. (1958). Avian salmonellosis in England and Wales 1948-56, with comment on its prevention and control.—*Vet. Rec.* **70, 374-382. [Authors' summary modified.]**

2747

A survey is given of avian *Salmonella* infections encountered in routine P.M. examinations at Weybridge from 1948-56. The figures are based on bacteriological examination of 18,422 batches of chicks, turkey poult, ducklings and goslings. *S. pullorum* was isolated from 8·38% of the batches of chicks, *S. typhimurium* from 3·2%, and *S. thompson* from 1·5%; the incidence of the rarer species was low. Two previously unrecorded serotypes were isolated: *S. new haw* ($O=3, 15; H=eh: 1, 5$) from 2 batches of turkey poult, and *S. weybridge* ($O=3, 10; H=d: z_6$) from 2 of 4 ducklings. A brief account is given of the control and prevention of pullorum disease, fowl typhoid, and the more common motile *Salmonella* infections in England and Wales. Particular reference is made to the use of a stained typhimurium antigen in rapid whole-blood agglutination tests.

MORAN, A. B. & EDWARDS, P. R. (1958). A new salmonella type: *Salmonella hamilton* (3, 15:Z₂₇).—*Cornell Vet.* **48**, 196-197. [Authors' summary modified.]

2748

S. hamilton was isolated from poult, 11 days old, from a flock in which a mortality of 10% had occurred. The antigenic formula of the organism is 3,15: z₂₇.

GREENE, V. W., OLSON, J. C., JR. & JEZESKI, J. J. (1957). Influence of heating on artificially induced antibacterial agglutinins in milk.—*J. Dairy Sci.* **40**, 1250-1257. [Authors' summary modified.]

2749

A technique is described for preparing an acid whey which retains the agglutinating power of milk against bacterial antigens. Using this whey in a tube agglutination test, the heat-resistant characteristics of antibodies specific against *S. pullorum* were determined. These were essentially the same as those previously reported for the serum protein fraction of normal milk, their inactivation being a function of temperature and the log. of time within the range 155° to 165°F. This milk could therefore be pasteurized and dried without impairing its agglutination ability.

VÁCZI, L., SZITA, J. & CIELESZKY, V. (1957). The role of lipids in induced chloramphenicol resistance of bacteria.—*Acta. microbiol. Acad. Sci. Hung.* **4**, 437-445. [In English.]

2750

In vitro studies showed that the resistance to chloramphenicol acquired by Gram-negative enteric bacteria extended also to terramycin and penicillin, but not to streptomycin. Such chloramphenicol-resistant bacteria had enhanced sensitivity to phenol, but were resistant to a surface-active agent. Their content in ether-soluble lipids was higher than that of sensitive bacteria, the difference being greatest for *Salmonella paratyphi B* and least for *S. typhi*. Extraction of such lipids by ether was complete within 60 min. Their amount in the bacteria increased in line with the development of resistance in *S. paratyphi B* and, after an initial decrease, also in *S. typhi*. These results were said to suggest that the non-specific resistance of these bacteria is largely due to an increase in lipids near their cell wall.—G. P. MARSHALL.

MUSCHEL, L. H., CHAMBERLIN, R. H. & OSAWA, E. (1958). Bactericidal activity of normal serum against bacterial cultures. I. Activity against *Salmonella typhi* strains.—*Proc. Soc. exp. Biol., N.Y.* **97**, 376-382. [Authors' summary modified.]

2751

The resistance of strains of *S. typhi* to the bactericidal action of normal g.pig, rabbit, and

human serum was determined. The order of resistance of the strains to sera of different species was in close agreement, but human sera exerted a greater bactericidal effect than rabbit or g.pig sera. The resistance of the strains containing both O and Vi antigens was associated with the O-inagglutinability or Vi content of the organisms. The natural bactericidal antibodies against *S. typhi* were of marked specificity and directed against either the O or R antigens. The resistance of the strains to phagocytin (an extract of rabbit polymorphonuclear leucocytes) or to chloramphenicol did not correlate with their resistance to normal serum components.

ULBRICH, F. (1957). Standardisierung des Abortus-Bang-Ringantigens. [Standardization of antigen for the *Br. abortus* ring test.]—*Berl. Münch. tierärztl. Wschr.* **70**, 329-331. [English summary.]

2752

The test could be standardized by the use of freeze-dried ring test antigen, which retained its activity for at least 7 years. The antigen was specified as a standard by the Ministry of Agriculture of West Germany in February 1956.

—R.M.

BÜRKI, F. (1957). Kutantest und Präzipitation des Blutserums mit einer nicht-agglutinogenen Fraktion aus *Brucella abortus* bei Meerschweinchen nach Infektion mit lebenden Bangbakterien. IV. Empfindlichkeitsrelation und klinische Bewertung der beiden Tests am Meerschweinchen. [Skin test and precipitation of blood serum with a non-agglutinogenic fraction from *Br. abortus*, in infected guinea-pigs. IV.]—*Arch. exp. VetMed.* **11**, 342-348. [For parts II & III, see *V.B.* **27**, 1987.]

[2753]

The allergen described previously was employed in intradermal and precipitation tests on g.pigs infected 6 weeks previously. The tests were less sensitive than agglutination or complement fixation tests and they only detected severe infection. In g.pigs a positive precipitation test was an indicator of active brucellosis.

—R.M.

CAMERON, H. S. & KENDRICK, J. W. (1957). Differentiating postvaccination reactions in brucellosis from virulent infection.—*J. Amer. vet. med. Ass.* **130**, 90-92.

2754

The plate test on whey previously described by the authors [*V.B.* **26**, 3389] became negative 3 months after cows had been vaccinated with Strain 19. It could therefore be used to distinguish between positive blood agglutination tests resulting from infection and those resulting from vaccination.—R.M.

BRAUN, W., POMALES-LEBRÓN, A. & STINE-BRING, W. R. (1958). Interactions between mononuclear phagocytes and *Brucella abortus* strains of different virulence.—*Proc. Soc. exp. Biol., N.Y.* **97**, 393-397. [Authors' summary modified.] **2755**

Studies on the interactions between S and R strains of *Br. abortus* and monocytes (in tissue culture) from normal or immune g.pigs indicated (1) intracellular multiplication of S bacteria and a lack of, or only insignificant, multiplication of R bacteria in normal monocytes; (2) differences in the rate of ingestion of S and R bacteria; (3) differences in the rate of destruction of monocytes by S and R types; (4) differences in the rate of intracellular multiplication among S strains; (5) a significant modification of these events in immune monocytes; and (6) an apparently unique behaviour of S bacteria of Strain 19 in normal monocytes. The authors discussed these findings in relation to some problems of host-parasite interactions; they suggested that the data might provide the basis for a new technique for rapid assessment of the homogeneity or heterogeneity of bacterial populations with regard to virulence.

KOSTNER, M. (1957). Terramycin und Abortus-Bang. [Terramycin and brucellosis.] — *Tierärztl. Umsch.* **12**, 395-396. **2756**

K. proposed the following scheme of treatment for all pregnant cows, following the occurrence of abortion due to *Br. abortus*: those negative to the agglutination test received 4 i/m inj. of 1.5 g. oxytetracycline once every 36-48 hours; those positive to the agglutination test received 3 g. streptomycin in addition to oxytetracycline. The dose of oxytetracycline was increased to 2 g. between the 21st and 30th weeks of pregnancy. He gave examples of herds where further abortions were stated to be largely prevented by this treatment.—R.M.

MOULTON, J. E. & MEYER, M. E. (1958). The pathogenesis of *Brucella suis* infection in guinea pigs. Lesions of the spleen, liver, testis, and articulations.—*Cornell Vet.* **48**, 165-195. [Authors' summary modified.] **2757**

G.pigs of both sexes were experimentally infected with a strain of *Br. suis* of known virulence, and the development of lesions was followed over a period of 134 days. At the same time, serum-agglutinin titres were determined and the localization of the organisms in the tissues studied by culture, staining and the use of fluorescent antibody.

ROOK, A. & CALCINARDI, C. (1957). Indagini sperimentali sulla brucellosi ovina e caprina

in cinque comuni della provincia di Massa-Carrara. [Experimental research on ovine and caprine brucellosis in the Massa-Carrara Province.] — *Zooprofilassi* **12**, 749-762. **2758**

In a survey of brucellosis in goats and sheep a comparative study was made of the intrapalpebral brucellin test and of the agglutination test (using a 5% saline or a physiological saline soln.).—T.E.G.R.

OSTERTAG, H. G. & MAYER, H. (1958). Die Verbreitung der Schafbrucellose bei Herdenhunden. [Incidence of *Br. melitensis* infection in sheepdogs.] — *Rindertuberk. u. Brucellose* **7**, 57-70. **2759**

Four serological tests for brucellosis were performed on sera from 102 sheepdogs attached to 50 flocks in North Württemberg: 31 gave positive reactions to 1 or more of the tests, but none showed symptoms or lesions of brucellosis. The intradermopalpebral test using *Br. melitensis* allergen gave reliable results: an increase in skin thickness by 3 mm. was regarded as a positive result. The organism was isolated from various organs of 12 of 16 dogs which had reacted to the allergic test: in several cases it was present in tonsils and salivary glands. Infection of 2 human beings was traced to a dog which had been used in an infected flock. It was concluded that sheepdogs should always be included in flock examinations for brucellosis, and that dogs reacting to diagnostic tests should be killed.—R.M.

GARGANI, G. & BENELLI, S. (1957). Esperienze sulla vaccinazione anti-brucellare della cavia con un vaccino criolizzato e adsorbito. [Tests with an adsorbed *Brucella melitensis* vaccine on g.pigs.] — *Boll. Ist. sieroter. Milano* **36**, 311-320. [Summary in English.] **2760**

A vaccine was prepared from a strain of *Br. melitensis* adsorbed on aluminium-potassium sulphate after being subjected to a process of alternate freezing and thawing for 20 times. This vaccine protected g.pigs against i/v challenge with a virulent strain of *Br. melitensis* but organisms were demonstrable in the spleen a month later; the organisms persisted in the spleen for three months after s/c inoculation.—T.E.G.R.

RENOUX, G. & SACQUET, E. (1957). Brucellose spontanée du lapin domestique. [Spontaneous brucellosis in domestic rabbits.] — *Arch. Inst. Pasteur Tunis* **34**, 231-232. **2761**

Br. intermedia was isolated from 2 of a batch of 98 rabbits purchased in Tunisia for lab. use. Brucella agglutinins were present in sera from 25 rabbits of this batch.—R.M.

GARGANI, G. & GUERRA, M. (1957). Osservazioni sperimentali sulla formazione di anticorpi antibrucellari monospecifici nel coniglio. [Formation of monospecific brucella antibodies in rabbits.]—*Boll. Ist. sieroter. Milano* 36, 345-351. [English summary.] **2762**

The technique for the production of monospecific sera is briefly described. A tentative suggestion is put forward to explain why absorption of heterologous agglutinins occurs early in infection. On the basis of an electrophoretic and colorimetric survey of absorbed and non-absorbed sera this phenomenon is attributed to a qualitative or quantitative change in pre-existing antibodies rather than to the late formation of antibodies lacking monospecificity.

—T.E.G.R.

GARGANI, G., BENELLI, S. & GUERRA, M. (1957). Tipizzazione di 119 stipiti di brucella isolati in Italia negli anni 1954-56 con particolare riguardo alle prove sierologiche. [Typing of 119 strains of brucella isolated in Italy during 1954-56 with special reference to serological tests.]—*Boll. Ist. sieroter. Milano* 36, 41-45. [Summary in English.] **2763**

Bacteriological and serological tests were carried out for the typing of 119 brucella strains from man, cattle and sheep. Of these 18 were typical strains possessing the classical serological and bacteriological characteristics. The remaining 101 were atypical with intermediate serological and bacteriological characteristics. In the latter group the strains most frequently isolated were *Brucella intermedia*, Tunisian type, and a strain of *Br. melitensis* which is very frequent in Italy and which has equal quantities of *Br. abortus* and *Br. melitensis* antigens.—T.E.G.R.

SOHRAB, V., MAGHAMI, G. & BAHAR-SEFAT, M. (1957). Fowl spirochaetosis in Iran with special reference to control the disease by immunization with a formalized chick-embryo vaccine.—*Arch. Inst. Hessarek* 10, 33-44. [In English. Summary in French.] **2764**

Spirochaetosis was widespread among fowls in Iran. The authors described the preparation of formalized chick-embryo vaccine, and reported good results from field trials of the vaccine. 5 different strains of the organism were antigenically identical.—R.M.

ZAHARIJA, I. (1958). Leptospirosis sejroe beim Pferd. [*L. sejroe* in horses.]—*Schweiz. Arch. Tierheilk.* 100, 163-167. [Summaries in English, French and Italian.] **2765**

Of 14 strains isolated at Zagreb from horses with leptospirosis, 1 was *L. sejroe* and the remainder were *L. pomona*.—R.M.

RISTIC, M., GALTON, M. M., SANDERS, D. A. & STEELE, J. H. (1957). *Leptospirosis*.—*Ann. Rep. agric. Exp. Sta., Univ. Fla.*, 1956 p. 146. **2766**

Experimental infection with *Leptospira sejroe* caused fever, sluggishness, diarrhoea and stiffness of the joints in yearling bulls. The organism persisted in the blood for up to six days after the onset of symptoms and was demonstrable in kidney and liver tissue. The micro-tube agglutinin titre was 1:64 six days after infection and reached a maximum of 1:16,000 at 10-12 days.—T.E.G.R.

IWATA, A., SUZUKI, Y., HIROTA, E., INUI, S., WATANABE, M. & YAMAMOTO, S. (1957). [Studies on bovine leptospirosis. II. Influence of penicillin injection on calves infected experimentally with *Leptospira hebdomadis*.]—*Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 33, pp. 9-17. [In Japanese. Abst. from English summary.] **2767**

Six calves were infected with *L. hebdomadis*. Two were inoculated i/m with 2 mega units penicillin daily for 4 days, commencing on the day of infection (Group 1). Two were inoculated with 8 mega units daily for 4 days from the first day of fever (Group 2) and two were not treated. Infection was suppressed in Group 1 and was only mild in Group 2.—R.M.

VELTSOS, A. & REKLITIS, S. (1957). [Leptospira infection of pigs in Greece.]—*Delt. Hellen. Kten. Hetair.* 2, 129-133. [In Greek. French summary.] **2768**

Clinical leptospirosis has not been recorded as occurring in pigs in Greece, but sera from 18 of 90 slaughtered pigs gave positive agglutination tests with one or more antigens prepared from *L. pomona*, *icterohaemorrhagiae*, and *canicola*.

—R.M.

WEBSTER, W. M. (1957). Susceptibility of the hedgehog (*Echinaceus europaeus*) to infection with *Leptospira pomona*.—*Nature, Lond.* 180, 1372. **2769**

The hedgehog, now numerous in New Zealand, was suggested as a possible reservoir of *L. pomona* infection on dairy farms. Thirty hedgehogs caught in a garden area were inoculated with a culture of *L. pomona* isolated from a sheep; all developed clinical leptospirosis with a characteristic course. Young animals died, with some or all of the signs of classical Weil's disease, adults usually survived and excreted the organisms in urine and pregnant females usually aborted. Two hedgehogs found during winter hibernation on a dairy farm on which

a severe outbreak of leptospirosis had recently occurred revealed typical leptospiral lesions at P.M. examination; a survey will be made in the coming spring season.—E.V.L.

KUJUMGIEV, I. (1957). Presenza di anticorpi per la *Leptospira andaman A* (*Leptospira CH₁₁*) nei polli. [*Leptospira andaman A infection in fowls.*]—*Vet. Ital.* **8**, 490-493. [Summaries in English, French and German.] **2770**

Specific agglutinins for *Leptospira andaman* were demonstrated in serum samples from fowls with symptoms of malaise and jaundice; no specific agglutinins for 13 other types of *leptospira* were demonstrable.—T.E.G.R.

MACKAY-DICK, J. & ROBINSON, J. F. (1957). Penicillin treatment of leptospirosis.—*Lancet* **273**, 346-347. **2771**

In 84 cases of confirmed human leptospirosis, treatment with 0·6 megaunit of crystalline penicillin i/m (four-hourly in the first 24 hours, and then six-hourly for a further six days) reduced the duration of the pyrexia to 16-20 days, when started within the first five days of the illness. 83% of the cases (*i.e.*, all those in whom treatment was started within that time limit) experienced a more or less severe Jarisch-Herxheimer reaction which was taken both as a diagnostic sign and as one of good response to the treatment. There were no deaths, relapses or signs of polyuria.—G. P. MARSHALL.

DEDIÉ, K., SCHEIBNER, G. & PREUSS, H. (1957). Zur Enterotoxaemie der Schafe vom Typ C in Deutschland. [*Enterotoxaemia of sheep in Germany caused by Cl. welchii Type C.*]—*Arch. exp. VetMed.* **11**, 921-929. **2772**

Type C was isolated from sheep dying from enterotoxaemia in several flocks presumably in the neighbourhood of Leipzig. This is the first report of Type C occurring in Germany.—R.M.

LIPSKY, J. (1957). Der Immunitätsablauf beim Schwein nach Tetanus-Schutzimpfung mit Aluminiumhydroxyd - Adsorbat - Impfstoff. [*Antitoxin titres in pigs after inoculation of aluminium hydroxide tetanus toxoid.*] — *Inaug. Diss., Munich* pp. 38. **2773**

Immunity was present in pigs 15 days after a single inoculation of tetanus toxoid adsorbed on aluminium hydroxide.—R.M.

TEICHMANN, J. (1957). Über die Neutralisationsversuche des Tetanus-Toxins durch sein homologes Antitoxin bei weissen Mäusen. [*Neutralization of tetanus toxin by homolo-*

gous antitoxin in mice.]—*Wien. tierärztl. Mschr.* **44**, 534-545. [Summaries in English, French and Italian.] **2774**

T. confirmed the opinion of Ercegovac [*Wien. tierärztl. Mschr.* **43**, 524 (1956)] that when toxin and antitoxin were injected simultaneously in the same field of innervation, a much smaller quantity of antitoxin was required to neutralize the toxin than when each injection was made in a different field of innervation.

—R.M.

HAKIOGLU, F. (1957). Darmentzündungen beim Botulismus des Rindes. [*Enteritis in botulism in cattle.*]—*Dtsch. Tierärztl. Wschr.* **64**, 421-423. **2775**

H. examined in Turkey the digestive tract of 19 cattle with what was regarded as acute or subacute botulism: a fatal illness lasting for from 2 to 9 days, characterized by inability to stand, weakness and sometimes difficulty in ruminating and diarrhoea. Catarrhal enteritis was present in 9 cattle, catarrhal-haemorrhagic enteritis in 7 and chronic-hypertrophic enteritis in 2.—R.M.

MCKEE, M. T., BELL, J. F. & HOYER, B. H. (1958). Culture of *Clostridium botulinum* type C with controlled pH.—*J. Bact.* **75**, 135-142. **2776**

Spore formation, acid production, and toxigenesis were strongly influenced by pH of the medium. Production of toxin is related to pH and maximum production probably occurs at pH 6·2 or less. In fact, maximum toxin titres occurred at a controlled pH of 5·7, the lowest value tested. These data support a suggestion that particulate animal tissues, not alkaline slurries of decomposing organic matter, are a favourable habitat for *Cl. botulinum* Type C. [See also *V.B.* **26**, 1177.]—R.M.

BOROFF, D. A. & FITZGERALD, J. E. (1958). Fluorescence of the toxin of *Clostridium botulinum* and its relation to toxicity.—*Nature, Lond.* **181**, 751-752. **2777**

Clostridium botulinum toxin was found to fluoresce when activated by ultraviolet, the intensity being related to the toxicity. Since chemical modification or preparative procedures which diminish the fluorescence also diminish the toxicity, this property of the toxin makes possible a new chemical approach to the study of the toxic portion of the molecule and serves as a physical, *in vitro* method for measuring the toxicity of a preparation.

Experiments with *Cl. botulinum* toxin at various pH values, with normal rabbit serum and specific rabbit antiserum (antitoxin) which

exhibit their own fluorescence, and with toxin mixed with metal salts to judge the effect of metallic ions on the protein of the toxin, seemed to indicate that alteration of the gross structure of the protein molecule destroys fluorescence and toxicity and that both these phenomena are properties of the intact molecule. But the authors consider it more probable that the relationship is more intimate and that some specific region of the molecule responsible for toxicity is also responsible for the fluorescence.—E.V.L.

MUNDT, W. (1957). Bewegungsstudien an *Vibrio foetus* im Hinblick auf den zeitlichen Infektionsablauf. [Motility of *V. fetus* in relation to the stage of infection.] — *Prakt. Tierarzt.* No. 11, pp. 321-322. **2778**

The velocity of comma-shaped vibrios (6-7 μ long) from a one to two-day-old culture averaged 9.5 cm./hour. That of longer forms (20-30 μ) from cultures up to 10 days old averaged 3.8 cm./hour. 10 ml. of a fresh culture was infused around the cervix of a cow, which was killed 1½ days later: vibrios were recovered from horns of the uterus, 0.8 m. from the site of infection.—R.M.

VANDEPLASSCHE, M., DEBACKERE, M., HUYSMAN, A., FLORENT, A. & PAREDIS, F. (1958). Het behandelen van stieren besmet met *Vibrio fetus*. [The treatment of bulls infected with *V. fetus*.] — *Vlaams diergeneesk. Tijdschr.* 27, 1-13. [In Flemish. Summaries in English, French and German. English summary modified.] **2779**

The diagnosis of *V. fetus* infection in bulls was made by means of the heifer test and (or) direct culture from the preputial fluid. The infected bulls were kept at the clinic during treatment and for the next few weeks while control examinations were made, to exclude all possibilities of re-infection. After epidural anaesthesia on the standing bull, local treatment was applied to the protracted penis and preputial mucosa. 30 infected bulls were treated with trypaflavine-solution and Bovoflavin ointment. The 85 other bulls were treated with a fat-free carbowax ointment in which aqueous solns. of streptomycin and terramycin were incorporated. Control tests were made mostly from 10 to 30 days after treatment by means of repeated direct culture from fresh preputial washings and by intra-uterine infusion of one or more heifers. Bacteriological examinations of the heifers were made from vaginal mucus samples during life and from all parts of the genital tract after slaughter. In consequence of the results published by Adler [*V.B.* 28, 2436] the control examinations after treatment were continued over a longer period,

namely 6-10 months (10 bulls), 4-5 months (7 bulls), 2-4 months (7 bulls), and 1-2 months (8 bulls). *V. fetus* could not be demonstrated either in these or in the other 83 bulls examined after treatment. This treatment is simple and cheap and cures almost 100% when it is applied carefully.

The disappointing results published by Adler may be explained by his different method of treatment, possibly even by a lack of control on the correct application of the treatment, and probably in the first place by a lack of control on the possibilities of re-infection after treatment.

FLORENT, A. (1957). Analogies entre certaines souches de *Vibrio coli* et certaines souches de *Vibrio foetus*. Adaptation des premières à l'intestin de la bête bovine. [Similarities between some strains of *Vibrio coli* and *V. fetus*. Adaptation of the former to the bovine intestine.] — *C. R. Soc. Biol., Paris* 151, 1055-1057. **2780**

Two types of *V. coli* were isolated from pig intestines. Type I did not produce H_2S and Type II did. Type I was morphologically, biochemically and antigenically similar to *V. fetus*. I/p inoculation of Type I caused abortion in mice and g.pigs. A mixture of Types I and II was introduced into the vagina of heifers but *V. coli* did not become established. Four cattle were given the same mixture by mouth, and Type I was recovered from the faeces of 3 of them; in 2 it was present for at least 2 months in faeces. F. suggested that Type I *V. coli* could enter the bloodstream from the intestine and colonize in the placenta, causing sporadic abortion of the type at present attributed to *V. fetus*. —R.M.

WALZL, H. & WILLINGER, H. (1957). Zur pathologisch-anatomischen und bakteriologischen Diagnostik der Schweinedysenterie. [Pathological and bacteriological diagnosis of dysentery in pigs.] — *Wien. tierärztl. Mschr.* 44, 595-601. **2781**

The authors regarded vibrios as the main cause of dysentery in pigs.—R.M.

LEV, M. (1958). Apparent requirement for vitamin K of rumen strains of *Fusiformis nigrescens*. — *Nature, Lond.* 181, 203-204. **2782**

F. nigrescens was isolated from rumen contents in association with an anaerobic strain of *Proteus*. When grown in pure culture, *F. nigrescens* died out after giving rise to various atypical forms, but when *Proteus* was inoculated on plates of *F. nigrescens* which had not shown growth after incubation for one week, good growth of *F. nigrescens* developed while control

plates remained the same. Experiments indicated that vitamin K was the required growth factor: many organisms, including *Proteus*, are known to synthesize vitamins of the K group and these experiments gave an example of vitamin interdependence among micro-organisms in the rumen.—E.V.L.

SCHULZE, W. (1957). Ein Beitrag zur Frage der Ultraschallwellenwirkung auf einige Bakterien- und Virusarten. [Action of ultrasonic waves on some bacteria and viruses.]—*Arch. exp. VetMed.* 11, 253-309. **2783**

Ultrasonic waves appeared to have no action on the viruses of foot and mouth disease, Aujeszky's disease, cow pox or swine fever although bacteria (*Staph. albus*, *Bact. prodigiosum*) were killed relatively easily. The activity of ultrasonic waves depended more on intensity and duration of exposure than on frequency.

—R.M.

PAYNE, J. M. (1958). Changes in the rat placenta and foetus following experimental infection with various species of bacteria.—*J. Path. Bact.* 75, 367-385. [Author's summary modified.] **2784**

When cultures of different species of bacteria are injected i/p into pregnant rats, lesions may arise in the placenta by ascending and descending infection.

Ascending infection occurs when *Corynebacterium pyogenes* or *Pasteurella pseudotuberculosis* is injected. After initial infection of the uterus they invade the edge of the placental disk. The placenta resists this by proliferation of endoderm cells on one side of Reichert's membrane and by infiltration of polymorphs, monocytes and mesenchyme cells on the other. Invasion of the labyrinth with abscess formation occurs when the bacteria gain entrance to the entodermal sinuses of Duval. *Corynebact. pyogenes* causes necrosis and mesenchyme-cell proliferation in the visceral yolk-sac wall. Ascending infection of the placenta was also caused by streptococcus Group C, *Corynebact. murium* and *renale*, and human and avian strains of *Mycobacterium tuberculosis*. These organisms caused lesions only when injected directly into the uterine lumen.

Descending infection occurs when *Brucella abortus*, *Erysipelothrix monocytogenes* and pneumococci are injected. Lesions occur initially in the junctional zone, but infection soon spreads into the labyrinth, necrosis and polymorph infiltration occur but the placental tissues do not react.

Foetuses may be killed by severe destruction

of placental tissue or by interference with the umbilical vessels entering the base of the placenta.

Subnormal weight in the foetus at term is not necessarily associated with the extent of placental lesions, but with the particular bacterium involved. Thus infections with the Gram-negative organisms *Past. pseudotuberculosis*, *Salmonella abortus-ovis* and *abortus-equi* have this effect but not to the same degree as with *Br. abortus*. These species also cause placental congestion and haemorrhage within 24 hours of infection. It is suggested that these phenomena may be due to some kind of toxæmia.

I. EPSTEIN, S. S. (1958). An intra-oral inoculation technique for the production of experimental pneumonia in mice.—*J. Hyg., Camb.* 56, 73-79. [Author's summary.] **2785**

II. EPSTEIN, S. S. & STRATTON, K. (1958). Further studies in the mouse intra-oral inoculation technique.—*Ibid.* 80-83. [Authors' summary.] **2786**

I. Techniques for the production of experimental pneumonia are briefly reviewed. A new method of intra-oral inoculation in the anaesthetized mouse is described and its advantages with particular reference to the danger of aerial contamination and facility of technique discussed. An application of this method to virulence studies is indicated and other possible applications suggested.

II. The immediate dispersal of a fluid delivered to anaesthetized mice by the intranasal and intra-oral techniques has been studied by means of a radio-active tracer method. The results clearly show that the intra-orally inoculated animal accepts a larger proportion of the total volume inoculated and that a significantly higher fraction of this reaches the lungs than in mice inoculated by the intra-nasal technique.

MOLINARI, P. (1958). La colimicina nella terapia delle infezioni gastro-intestinali ed urologiche nel cane. [Colimycin in the treatment of infections of the gastro-intestinal and urinary systems in dogs.] — *Nuova Vet.* 34, 36-41. **2787**

In oral doses ranging from $\frac{1}{2}$ -1 megaunit per day, according to age, for an optimum of 3-4 days, colimycin produced good results in 9 of 11 dogs with acute gastritis, 5 of 7 with acute gastro-enteritis, both of 2 with acute nephritis, 2 of 3 with urethritis and 1 of 3 with cystitis. Results were fair in a further 4 animals, and negative in the remaining four, including the one case of pyelonephritis.—G. P. MARSHALL.

JONES, R. S. & MAYNE, Y. C. (1958). Experimental arthritis. III. Modification of acute lesions in the guinea pig by corticotropin (ACTH) and steroids.—*Arch. Path.* **65**, 247-260. **2788**

A histochemical and histological study of the influence of corticotrophin and various steroids (including progesterone, pregnenolone and corticosterone) on arthritis following i/v inj. of bacterial polysaccharide.—R.M.

DARLOW, H. M., POWELL, E. O., BALE, W. R. & MORRIS, E. J. (1958). Observations on the bactericidal action of hexyl resorcinol aerosols.—*J. Hyg., Camb.* **56**, 108-124. [Authors' summary modified.] **2789**

The bactericidal action of hexyl resorcinol vapour on airborne clouds on a variety of micro-organisms including *Br. suis*, *Br. abortus* Strain 19, *E. coli* and vaccinia virus was studied. In addition to killing rates comparable with those found by previous workers, a phenomenon termed the initial kill was demonstrated and experiments were carried out to explain its mechanism. Under certain circumstances it enhances the elimination of viable bacteria very substantially.

IWANOFF, X., YUAN CHANG-KUO, & FANG SHIH-CHIEH. (1957). Über die toxische Enzephalomalazie (Moldy corn poisoning) der Einhufer in China. [Toxic encephalomalacia of solipeds in China, caused by mouldy maize.]—*Arch. exp. VetMed.* **11**, 1036-1056. **2790**

A condition closely resembling the "moldy corn poisoning" described by American authors was observed in several provinces of China, mainly amongst donkeys but also in horses and mules. It occurred in late autumn and winter and was reproduced by feeding mouldy maize, but the fungus or fungi responsible were not identified. Differentiation of the condition from viral encephalomyelitis, which also occurs in horses in China, was difficult. There is a detailed account of histological findings.—R.M.

VAN BUREN, J. M. (1958). Septic retinitis due to *Candida albicans*.—*Arch. Path.* **65**, 137-146. **2791**

A patient with systemic moniliasis developed a retinal abscess in which the fungus was demonstrated at autopsy. Antibiotic therapy had been used to treat a pneumonitis complicating multiple myeloma.

—E. G. WHITE.

REDAELLI, G. & ROSASCHINO, F. (1957). Ricerche sulle mastiti micotiche. III. Tentativi di terapia della mastite criptococcica. [Mycotic mastitis. III. Treatment of *Cryptococcus neoformans* mastitis.] — *Arch. Vet. Ital.* **8**, 311-322. [Summaries in English, French and German.] **2792**

The activity of cycloheximide, nystatin, polymyxin B, neomycin and isoniazid against *Cryptococcus neoformans* was tested *in vitro* and in 2 goats and 2 cows infected artificially. Actidione was active *in vitro* at a conc. of 5-10 µg./ml.; nystatin at 40-160 µg./ml.; neomycin and polymyxin B at 320-640 µg./ml.; isoniazid was inactive. The agents tested had no effect on the clinical course of the disease.—T.E.G.R.

KRUGLOV, V. T. (1957). [Treatment of equine epizootic lymphangitis with protoanemonin.] — *Trud. vsesoyuz. Inst. eksp. Vet.* **20**, 354-360. [In Russian.] **2793**

Success was claimed for the local treatment of epizootic lymphangitis ulcers by application of 0.15-0.2% soln. of protoanemonin [an extract of *Ranunculus* plants]. This concentration killed 3-week-old cultures of the fungus in 10 min. and strongly inhibited its growth after contact for 5 min.—R.M.

BÉKÉSI, I. (1958). Flavofungin, a new crystalline antifungal antibiotic: Origin and biological properties.—*Nature, Lond.* **181**, 908. **2794**

A new antibiotic was isolated from the mycelium and fermentation liquid of an asporogenous, chromogenic fungus designated *Streptomyces flavofungi*, found in desert sand. Flavofungin exerted marked inhibition *in vitro* on a wide range of pathogenic and non-pathogenic yeasts, yeast-like fungi, and dermatophytes. It was well tolerated orally and subcutaneously by mice and inhibited *Candida albicans* in the faeces of mice fed this organism. Further details are being published elsewhere.—E. G. WHITE.

O'BRIEN, J. D. P. & SELLERS, K. C. (1958). A clinical trial of the treatment of cattle ringworm. — *Vet. Rec.* **70**, 319-320 & 321. [Authors' summary modified.] **2795**

Four antifungal preparations were compared in a controlled manner in a group of yarded cattle with extensive ringworm lesions on head and neck. Following two applications of the agents at an interval of four days, some regression occurred in treated lesions relative to the controls but this was not maintained. Spontaneous healing of treated and untreated lesions occurred 150 days after the infection was first

noted and 90 days after treatments were applied. The problem of assessing the value of antifungal agents under farm conditions is discussed.

PLOWRIGHT, W. (1958). Cutaneous streptothricosis of cattle in Nigeria. II. The aerobic actinomycete (*Nocardia* sp.) associated with the lesions.—*J. comp. Path.* **68**, 133-147. 2796

A number of important skin diseases in domestic animals characterized by a proliferative dermatitis are associated with a branched, filamentous organism with a Gram-positive mycelium which parasitizes epithelial cells and gives rise to coccal forms which often appear in two to eight parallel rows within the parent filaments. These diseases include "lumpy wool disease" in sheep in Australia and Gt. Britain, a mycotic dermatitis in horses and cattle in Australia, cutaneous streptothricosis in cattle in Africa, and "strawberry foot rot" in Gt. Britain. P. gives a detailed description of the organism that causes bovine cutaneous streptothricosis in Nigeria and points out its similarity to the organisms isolated from the other diseases mentioned. He suggests that the various organisms are "soft" mycelial species of the genus *Nocardia* [but see Austwick, 1958 *Vet. Rev. Annot.* Vol. 4, Part 1. pp. 33-48]. The Nigerian strains usually produce a scanty, transient, aerial mycelium and give rise to motile coccoid forms. Their ability to use sugars is limited but they are proteolytic.—E. G. WHITE.

PIER, A. C., GRAY, D. M. & FOSSATTI, M. J. (1958). *Nocardia asteroides*—A newly recognized pathogen of the mastitis complex.—*Amer. J. vet. Res.* **19**, 319-331. 2797

Nocardia asteroides was isolated from the udder of cows in two herds in California. In one of the two herds investigated there were 28 cases (18% of the animals) of clinical mastitis with proliferative granulomatous lesions, often severe and sometimes associated with pyrexia. The distribution of the lesions suggested infection through the teat canal. The organisms survived heating to 64°C. for 30 min. They were susceptible to novobiocin and nitrofurazone *in vitro* and *in vivo*. Infected animals did not react to tuberculin.—E. G. WHITE.

JAMIESON, N. D. & LOFTUS, T. M. (1958). A characteristic filamentous bacterial rumen

organism, indicative of a sustained low ruminal ammonia-nitrogen level.—*N. Z. J. agric. Res.* **1**, 17-30. [Authors' summary.] 2798

A filamentous bacterium occurring sporadically in the rumen of sheep on pasture, has been identified as a member of the family Beggiatoaceae and shows characteristics intermediate between those of the two genera, *Thiothrix* and *Beggiatoa*.

The presence of the filaments in the rumen is indicative of a sustained level of ammonia-nitrogen, lower than that usually found in the rumen liquor of sheep on pasture. Such conditions can occur under various listed circumstances. Ammonia-nitrogen in the form of ammonium ions is not toxic to the bacterium, and its failure to develop or to be maintained in the rumen under conditions which lead to the normal moderate levels of ammonia-nitrogen may possibly be linked with the activity of ammonia-producing organisms in the rumen.

The filaments appear in samples from animals suspected of being cobalt deficient, but again the presence of a low ammonia-nitrogen level appears to be the governing factor, since it is possible to maintain the bacterium in the rumen of an animal receiving ten times its daily requirement of cobalt—provided the ammonia-nitrogen being formed in the rumen is kept at a low value.

Some preliminary attempts have been made to culture the bacterium *in vitro*.

MÅNSSON, I. & NILÉHN, P.-O. (1958). Undersökning av aeroba mikrofloran i vämmen hos nötkreatur vid vissa sjukdomstillstånd. [Studies on the facultative aerobic microflora of the bovine rumen in ruminal putrefaction.] —*Nord. VetMed.* **10**, 161-166. [In Swedish. Summaries in English and German.] 2799

Rumen contents (0.05 ml.) were inoculated on ordinary media (horse-blood agar and bromcresol purple lactose agar). 76 animals with putrefaction of the rumen contents as described by Broberg [*V.B.* **27**, 3649] showed, in relation to 21 healthy animals, great differences in the composition of the rumen flora. An increase of coliform bacteria was shown in most of the cases. In these cases also pseudomonas and proteus bacteria were often present. The animals recovered after treatment based on restoring the normal microflora (verified by cultivation).

—R.M.

DISEASES CAUSED BY PROTOZOAN PARASITES

STUBBS, R. K., BOBALIK, G. & ERCOLI, N. (1958). Effect of X-ray radiation on *Trypanosoma equiperdum* in vivo and in vitro.—*J. infect. Dis.* **102**, 35-43. [Authors' summary modified.] **2800**

Exposure of mice to X-rays (250-500 r) a few hours or one day after infection with *T. equiperdum* reduced parasitaemia without affecting the time of death. Strains obtained from the irradiated mice caused relapsing infection which appeared in a fluctuating form during 31 mouse passages. Irradiation of the mice before inoculation also decreased parasitaemia, and no infection developed in 7 of 16 mice given a normally fatal inoculum immediately after exposure to 200 r.

In vitro, 5,000-10,000 r reduced infectiveness in the form of an increased latency period and/or in the number of mice developing infection. Mice which remained healthy were successfully re-infected, indicating that no immunological response had occurred. In some mice the trypanosomes irradiated *in vitro* produced a subacute type of infection.

WILLIAMSON, J. (1957). Suramin complexes. I. Prophylactic activity against *Trypanosoma congolense* in small animals.—*Ann. trop. Med. Parasit.* **51**, 440-456. [Author's summary modified.] **2801**

DESOWITZ, R. S. (1957). Suramin complexes. II. Prophylactic activity against *Trypanosoma vivax* in cattle.—*Ibid.* **457**-463. [Author's summary modified.] **2802**

I. W. outlined the evolution of the suramin complexes. The quantitative relations which govern the formation of salt complexes between the anionic suramin and the cationic drugs used in the treatment of animal trypanosomiasis were investigated. The union was shown to be based on a ratio of one molecule of suramin to 3 of a bifunctional cationic drug such as antrycide, and of one molecule of suramin to 6 of a mono-functional cationic drug such as ethidium. Some chemical and physical aspects of the suramin complexes were discussed. A single injection of the complexes considerably reduced the toxicity of the cationic drug constituent and produced or increased prophylactic activity in it. This activity appeared to be retained, though not uniformly, by heat-dried and vacuum-dried preparations of the complexes. The activity of the suramin complexes is considered as a form of 'depot' prophylaxis.

II. With zebu cattle challenged at regular intervals by *Glossina palpalis* infected with *T.*

vivax, a preliminary investigation was made into the prophylactic activity of suramin complexes of antrycide dimethylsulphate, ethidium bromide, berenil, prothidium (RD. 2801) and RD. 2902. Although only a few cattle were used in each trial, there are indications that the ethidium complex is the most promising; at dose rates of 5 and 10 mg. per kg. the minimum protective period was 216 and 385 days respectively. Severe local reactions were caused. Prothidium at 2 mg. per kg. protected cattle for a minimum period of 144 days. At the high dose rates which can be given in complex form the protective period can be greatly extended, the minimal period at 10 mg. per kg. being 285 days. RD. 2902 also gives prolonged protection. The minimal protective period at 10 mg. per kg. was 280 days. A reasonable period of prophylaxis is given by the antrycide dimethylsulphate complex only at the higher dose rates of 20 and 40 mg. per kg., when the minimal protective periods were 137 and 162 days respectively.

The complexes are less toxic than the basic trypanocidal drugs alone. The reduction in the toxicity of a drug given in complex form was most marked with antrycide dimethylsulphate, and least so with ethidium bromide. No toxicity trials were carried out with prothidium or RD. 2902 or their complexes, but 20 mg. per kg. of either the prothidium complex or the RD. 2902 complex caused no severe local reactions or obvious toxic symptoms among the few animals treated. A few observations were made on the development of drug resistance in strains of trypanosomes which eventually broke through in animals treated with the complexes. It was found that, whereas animals re-treated at the original dosage with the ethidium complex were readily cured, those re-treated with the antrycide complex might relapse, even when re-treated with double the original dose.

CHANDLER, R. L. (1958). Studies on cattle protected by antrycide and exposed to regular challenges with trypanosomes.—*J. comp. Path.* **68**, 261-363. [Author's conclusions.] **2803**

Eighteen cattle, all inoculated with the field dose of Antrycide Pro-salt and some regularly challenged with *T. congolense*, were not apparently infected by heavy challenge with *T. congolense* up to ten months after the original drug administration. It was apparent that the drug alone was capable of protecting all the cattle during this long period.

Serological tests were conducted throughout

the experiment and antibodies, against the homologous strain only, were detected in the sera of those cattle which were regularly challenged.

All the cattle became infected and lost weight following a final heavy challenge using a strain of *T. congolense* which was both heterologous to that of the previous challenges, and, in addition, resistant to Antrycide.

It was not possible to determine whether as a result of these regular challenges, the regularly challenged cattle possessed any degree of protection against the homologous strain of *T. congolense*; it was however shown that these cattle did not possess any noticeable degree of protection against the heterologous strain.

BRAGA, P. C. (1957). Saggi sperimentalali sul trattamento delle tripanosomiasi. [Experimental treatment of trypanosomiasis.]—*Zoot-profilassi* **12**, 552-558. **2804**

The therapeutic activity of arsenobenzole and of naganol (a urea compound) was tested on rabbits, dogs and horses artificially infected with *T. evansi*. The drugs were administered s/c after the appearance of the parasites in the blood and the onset of clinical symptoms. Arsenobenzole gave negative results while good results were obtained with naganol.—T.E.G.R.

ADIWINATA, R. T. (1958). Penjelidikan tentang pemakaian tjampuran naganolhyaluronidasis dalam pemberantasan sura. [Investigations into the use of a combination of suramin and hyaluronidase in the control of surra.]—*Thesis, Bogor* pp. 108. [In Indonesian. Summary in English.] **2805**

There was no tissue reaction following i/m inj. of a 10% aqueous soln. of suramin to which hyaluronidase had been added in the proportion of 2 viscosity units to 3 g. of suramin. The two components were dissolved in water separately and mixed just before injection. Addition of hyaluronidase did not enhance either therapeutic or toxic properties of suramin, and it did not promote diffusion of the drug across the blood-brain barrier.—R.M.

TARLATZIS, C., PANETSOS, A. & DRAGONAS, P. (1957). Further experiences with furacin in treatment of ovine and caprine coccidiosis.—*J. Amer. vet. med. Ass.* **131**, 474. **2806**

It was more convenient to administer nitrofurazone as tablets of 50 mg. plus glucose excipient than as a powder. In outbreaks of coccidiosis among lambs and kids, mortality was prevented by giving each animal 2 tablets daily for 5 days. [See also *V.B.* **25**, 2765.]—R.M.

BOCH, J. (1957). Versuche zur Behandlung der Kaninchenkokzidiose mit Nitrofurazon (Furacin-W). [Treatment of coccidiosis in rabbits with nitrofurazone.]—*Berl. Münch. tierärztl. Wschr.* **70**, 264-267. [Summary in English.] **2807**

The drug was given in the food at a dosage of 0.5-1 g./kg. body wt. for prophylaxis and 1.5-2 g./kg. for therapy.—R.M.

TUGWELL, R. L., STEPHENS, J. F. & HARMS, R. H. (1957). The relationship of vitamin K to mortality from cecal coccidiosis.—*Poult. Sci.* **36**, 1245-1247. [Authors' summary modified.] **2808**

Mortality in chicks inoculated with *Eimeria tenella* fell when vitamin K was added to the diet. Blood clotting time decreased also. In one of two experiments 20 g. of menaphthone sodium bisulphite per ton of food significantly reduced mortality compared with one g. per ton. Lucerne leaf meal as 3% of the diet appeared to supply enough vitamin K to prevent high mortality.

ISHIGURO, H. (1957). [Plasmodium japonicum. A new species of malaria parasite pathogenic for the domestic fowl.]—*Bull. Fac. Agric. Yamaguti Univ., Japan* No. 8. pp. 723-733. [In Japanese. Abst. from English summary.] **2809**

The plasmodium was found in the blood of chicks, hens, wild birds, pheasants and peahens. It differed from *Pl. gallinaceum* and *lophurae* in having a maximum of only 6 merozoites and in producing a very mild infection in chicks, characterized by enlargement of spleen and malarial pigmentation of spleen and liver. The asexual cycle lasted 18-24 hours.—R.M.

I. **NIKOL'SKII, S. N. & POKIDOV, I. I. (1958).** [Use of berenil and antrycide in treatment of haemosporidial infections in cattle.]—*Veterinariya, Moscow* **35**, No. 5. p. 48. [In Russian.] **2810**

II. **LI, P. N. (1958).** [Berenil in treatment of haemosporidial infections of cattle.]—*Ibid.* pp. 48-49. [In Russian.] **2811**

I. & II. "Berenil" cured *Babesia bigemina* and *Françaiella colchica* infections after 1 or 2 i/m injections. The dosage was 5 ml. of a 7% aqueous soln./100 kg. body wt. Antrycide was ineffective.—R.M.

VON BACKSTRÖM, U. (1957). Some unusual cases. Peracute anaplasmosis—involving 337 cows.—*J. S. Afr. vet. med. Ass.* **28**, 216-219. **2812**

Illness manifested by fever, excitement, muscular tremors, rapid pulse and respirations and death after 1 or 2 days was associated with massive infection of erythrocytes with *Anaplasma marginale*. The condition was at first thought to be poisoning, probably by lead. Early treatment with 'a proprietary gall-sickness anti-toxin' and carbachol was stated to have cured 104 of 120 cases.—R.M.

CHRISTENSEN, J. F., OSEBOLD, J. W. & ROSEN, M. N. (1958). Infection and antibody response in deer experimentally infected with *Anaplasma marginale* from bovine carriers.—*J. Amer. vet. med. Ass.* **132**, 289-292. [Authors' summary modified.] **2813**

Four adult male deer (*Odocoileus hemionus columbianus*) inoculated s/c with blood from bovine carriers of *A. marginale* developed infections that were readily detected by the examination of blood smears and by the rise in c.f. titres. Three of the infections were subclinical, while one deer showed anaemia and weakness. Blood from 2 deer, taken after the appearance of anaplasma in the r.b.c., produced acute, fatal anaplasmosis after inoculation into 2 splenectomized calves. The antibody responses in the deer were marked, with c.f. titres rising sharply by the time anaplasma appeared in the r.b.c. and remaining high until these declined. Attention is called to the possibility of transmission of *A. marginale* infection between cattle and deer on ranges occupied by these animals and vector ticks.

PEREPECHAEV, A. N. & AMOSOV, B. K. (1958). [Treatment of anaplasmosis in cattle with rivanol.]—*Veterinariya, Moscow* **35**, No. 5, pp. 34-37. [In Russian.] **2814**

The authors claimed good results for the treatment of bovine anaplasmosis with an

See also absts. **2887** (immunology); **3011** (action of antibiotics on *Tr. foetus*); **3070** (report, Cyprus); **3071** (report, Jamaica); **3075** (report, U.S.A.).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

MAQSOOD, M., ISHAQ, S. M. & ANWAR, M. (1958). A heat intolerance syndrome in cattle following an attack of foot-and-mouth disease.—*Vet. Rec.* **70**, 299-300. **2817**

Heat intolerance of cattle following F. & M. disease in an environmental shade temperature of 100° to 110°F. was marked by panting, increased body temp., respiration and pulse rates, a decline in milk secretion and fertility and mucous discharge from the nostrils. At P.M. examination petechial haemorrhage was seen in the meninges and histological examination of the thyroid indicated increased activity in the pro-

alcoholic soln. of rivanol injected i/v. The soln. had to be freshly prepared and a dose for one animal was made up from 0.2 g. rivanol, 120 ml. hot sterile water and 60 ml. rectified spirit. If there was no reduction in body temp. the dose was repeated at intervals of 12 or 24 hours. Of 10 cattle thus treated, 8 recovered after 1 dose and 2 after 2 doses. Mixed infection with anaplasmosis and piroplasmosis was diagnosed in 44 cattle. These responded to 1-3 treatments with rivanol plus trypaflavine or haemosporidin.

—R.M.

LERCHE, M. & BROCHWITZ, H. (1957). Sarkosporidienbefall des Rindes und Perimyositis eosinophilica. [Sarcosporidia infection and eosinophilic perimyositis in a cow.]—*Dtsch. tierärztl. Wschr.* **64**, 251-252. **2815**

The myositis was found at slaughter of a cow aged 4 years. Sarcosporidia were also present, but it was not clear whether there was a causal relationship between them and the myositis.—R.M.

HÄCKER, K.-A. (1957). Die Beziehungen des Toxoplasmostestes nach Sabin und Feldman zum Sarcosporidienbefall bei Schaf und Rind. [Correlation between toxoplasma dye test results and sarcosporidiosis in sheep and cattle.]—*Inaug. Diss., Munich* pp. 51. **2816**

The dye test described by Sabin & Feldman was applied to sera from 50 calves, 100 adult cattle, 20 lambs and 100 adult sheep. Results were compared with post-mortem examination of the oesophageal musculature for sarcosporidia. The intensity of sarcosporidia infestation corresponded, in general, with the titre of the dye test. At the same degree of infestation, much higher titres were obtained with sheep sera than with cattle sera.—R.M.

duction of thyroid hormone. The administration of a goitrogen improved affected animals.

—E.V.L.

PERUS (1957). Prophylaxie de la fièvre aphteuse par la méthode de l'abattage des malades et des contaminés dans le département du Finistère. Problèmes techniques. [Control of foot and mouth disease in the Finistère Department of France by slaughter of affected and contact cattle.]—*Bull. Off. int. Epiz.* **47**, 769-776. **2818**

A slaughter policy to control F. & M.

disease was begun in January 1957, and in the first 8 months of the year 25 outbreaks were dealt with, involving the slaughter of 336 cattle and 279 pigs. Vaccination was not permitted. A high degree of control of the disease had been already achieved.—R.M.

WITTMANN, G. (1957). Die Tenazität des MKS-Virus in virushaltigen Schweinegeweben. [Persistence of foot and mouth disease virus in tissues of slaughtered pigs.] — *Mh. Tierheilk.* **9**, 215-230. **2819**

The virus content of various infected organs and tissues remained relatively constant during storage of between -15° and -20° C. for from 98 to 150 days. In organs and tissues kept at room temp. (20°) after slaughter the virus was still alive after 6 days, but only blood and kidney remained infective after 10 days. Some virus survived 42 days' storage at 4° C.

Virus was recovered irregularly and in small amount from skeletal and cardiac muscle. Inactivation of virus at temperatures above freezing was more rapid in tissues which had been frozen and thawed than in tissues which had not been frozen. In kidney the virus seemed particularly resistant to temperature. Rapid inactivation of virus in bacon and kidney by cooking was achieved only when every part of the meat attained 60° C. for 30 min.—R.M.

WITTMANN, G. (1957). Die Tenazität des MKS-Virus im tiefgefrorenen Speck krankgeschlachteter Schweine. [Survival of foot and mouth disease virus in deep-frozen bacon of infected pigs.]—*Berl. Münch. tierärztl. Wschr.* **70**, 321-323. [Summary in English.] **2820**

Bacon from pigs killed at the height of infection was stored at between -15° and -20° C. It remained infective for unweaned mice after 55 days' storage; thawing did not reduce the infectivity of bacon, but the virus died about 5 days after thawing, when the pH had fallen below 6.—R.M.

POTEL, K. (1957). Zum Vorkommen von Organveränderungen bei experimenteller Maul- und Klauenseuche des Meerschweinchens und zur Frage ihrer Spezifität. [Occurrence and specificity of lesions in the organs of guinea-pigs infected with foot and mouth disease virus.]—*Arch. exp. VetMed.* **11**, 879-905. **2821**

Lesions found in the abdominal and thoracic organs of g.pigs experimentally infected with F. & M. disease virus must be regarded as non-

specific, because similar lesions were found in g.pigs which had died from a bacterial infection.

—R.M.

KUNTER, E. (1957). Maul-und-Klauenseuche-Trockenantigen für die Komplementbindungs-[Dried antigen for the complement-fixation test in foot and mouth disease.]—*Arch. exp. VetMed.* **11**, 930-934. **2822**

F. & M. disease vesicles were extracted with phosphate buffer or water. Extracts were heated at 56° C. for 30 min. to inactivate virus and anticomplementary substances, extracted with chloroform, and then dried by evaporation at 37° . The type-specificity of antigen was not influenced by this procedure. Dried antigen retained its activity after storage for 6 months in a refrigerator or 3 months at room temp.—R.M.

— (1957). Methods of typing and cultivation of foot-and-mouth disease virus. pp. 107. Paris: The Organisation for European Economic Co-operation. (Project No. 208.) 7s. **2823**

An account of a seminar held at the State Veterinary Research Institute, Amsterdam in 1955. It includes texts of papers read:—by J. B. Brooksby & J. Rogers on methods used at Pirbright; J. Verge *et al.* on complement fixation; H. H. J. Frederiks on identification and titration of the virus; J. G. van Bekkum on neutralization tests in tissue culture; H. S. Frenkel on cultivation of the virus; R. Willems & J. Leunen on the Frenkel method of cultivation; C. Mackowiak on the same subject; C. Belin on virus cultivation *in vivo*.—R.M.

GUILLOT, P. (1958). Culture du virus de la fièvre aphteuse (type O) en culture de tissus de reins de porc. II. Étude au microscope électronique de l'évolution des cellules infectées. [Culture of foot and mouth disease virus in tissue cultures from pig kidney. II. Electron microscopy of infected cells.]—*Ann. Inst. Pasteur.* **94**, 569-576. [Summary in English.] **2824**

The most important changes observed by electron microscopy in cells infected 48 hours previously occurred in the nucleus: its contents became homogeneous and denser. Aggregates of small dense particles about $15-25\text{ }\mu\text{m}$ diam. formed in about 5% of nuclei examined (9 photomicrographs).—R.M.

DINTER, Z. (1958). Interferenz zwischen cytopathogenen und nicht-cytopathogenen Partikeln des Virus der Maul- und Klauenseuche (MKS). [Interference between cytopatho-

genic and non-cytopathogenic particles of foot and mouth disease virus.]—*Arch. ges. Virusforsch.* 8, 42-50. 2825

During cultivation and titration of various strains of F. & M. disease virus in cultures of calf kidney epithelium, differences in the degree of cytopathogenicity were observed. The presence of virus was always manifested by the occurrence of degeneration and 11 of 20 strains were highly cytopathogenic: the remainder caused lesser degrees of cell destruction. Poorly cytopathogenic strains apparently blocked the cells to highly cytopathogenic strains. Incomplete cell destruction was regarded as a sign of interference between cytopathogenic and non-cytopathogenic particles.—R.M.

VERGE, J., PARAF, A., DHENNIN, LOUIS., DHENNIN, LÉONE. & ASSO, J. (1957). Culture du virus aphéteux sur le lapin nouveau-né. Modification des pouvoirs pathogène et antigène. [Modification of the pathogenic and antigenic properties of foot and mouth disease virus by passage in new-born rabbits.]—*Bull. Acad. vét. Fr.* 30, 291-298. 2826

All three types (A, O and C) of foot and mouth disease virus were adapted to new-born rabbits in which they caused paralysis and death about 48 hours after i/p injection. The virus was fully virulent for cattle and g.pigs after 50 passages. It progressively lost its virulence on alternate passage in adult rabbits. The virus was not demonstrable by the c.f. test. Guinea pig-adapted virus did not cause local lesions in adult rabbits.—T.E.G.R.

BEREZNAJ, T., RICHTER, J. & SZENT-IVÁNYI, M. (1957). Über die Immunität neugeborener Kälber gegen Maul- und Klauenseuche. [Immunity against foot and mouth disease in new-born calves.]—*Acta vet. hung.* 7, 391-396. [In German.] 2827

The authors confirmed that immunity to F. & M. disease was transferred to the calf through the colostrum. [See also *V.B.* 26, 1227].—R.M.

DU METZ, J. M. & BONNAUD, P. (1957). La vaccination contre la fièvre aphéteuse chez le porc par la méthode intradermique. [Intradermal inoculation of foot and mouth disease vaccine in pigs.]—*Réc. Méd. vét.* 133, 579-583. 2828

An outbreak of the disease in a large piggery was controlled by the slaughter of infected animals and by intradermal inoculation of each pig with 1.3 ml. of 2 vaccines, one prepared from types O and A of the virus and the other from type C. [See also *V.B.* 28, 2120.]—R.M.

KOJNOK, J. & GRÉCZI, E. (1957). Serum against Aujeszky's disease in sucking pigs.—*Acta vet. hung.* 7, 423-427. [In English.] 2829

Pigs immune to Aujeszky's disease and swine fever were hyperimmunized with Aujeszky virus propagated in tissue culture; the serum so produced protected rabbits and sucking piglets against experimental infection. In a large-scale trial on pig farms infected with Aujeszky's disease, only 63 of 943 sucking piglets inoculated with the serum died, compared with 229 deaths among untreated controls.—E.V.L.

JANSEN, J. (1957). De ziekte van Aujeszky bij de hond. [Aujeszky's disease in dogs.]—*Tijdschr. Diergeneesk.* 82, 979-983. 2830

The disease was diagnosed clinically in a bitch. It was transmitted to rabbits by s/c inj. of spinal cord suspension, but not by inoculation of blood or suspensions of brain, lungs and subcutaneous tissue. The source of virus could not be traced.—R.M.

BINDRICH, H. & KUWERT, E. (1957). Die diagnostische Bedeutung der Komplement-bindungsreaktion bei Tollwut. [Diagnostic significance of the complement-fixation test in rabies.]—*Arch. exp. VetMed.* 11, 1015-1034. 2831

Several hundred c.f. tests were performed on sera mainly from dogs and foxes but also from horses, cattle and other animals. Antigens for the test were prepared from street or fixed strains of the virus present in suspensions of brain from infected animals; the suspensions were frozen at -20°C. for at least 12 hours, thawed and centrifuged at 3,000 r.p.m. for 30 min. The authors confirmed the diagnostic reliability and specificity of the test in rabies. [See also *V.B.* 28, 1415].—R.M.

PEREZ GALLARDO, F., ZARZUELO, E. & KAPLAN, M. M. (1957). Local treatment of wounds to prevent rabies.—*Bull. World Hlth Org.* 17, 963-978. [Summary in French. Authors' summary modified.] 2832

The addition of hyaluronidase to a suspension of rabies virus did not increase the infectivity of the suspension when this was applied to wounds in g.pigs but there was a trend towards increased pathogenicity of the hyaluronidase-virus mixture over virus suspension alone when inoculated i/m. In the local treatment of wounds the protective action of nitric acid applied within 4 hours, but not after a 24-hour interval, after infection, confirmed the results of other workers. Antirabies serum was effective both when infiltrated under the wound and when inoculated

systemically up to 24 hours after infection. The results suggested that the serum exerted a specific local action. While some protection was apparently achieved by gentle swabbing with the detergent "Terjolate", or by infiltration of saline soln. under the wound, up to 3 hours after infection, it was distinctly inferior to that obtained with nitric acid or serum. The authors point out the excellent results reported for a different detergent benzalkonium chloride ("Zephiran") [see *V.B.* 25, 668] and recommend further studies on this and other similar substances less corrosive than nitric acid. These experiments and those reported by other workers indicate the value of simple washing, flushing or irrigation of wounds as a means of reducing virus concentrations below the infective dose. Further research on local treatment of wounds is needed to clarify the mechanism of action of various procedures and agents now used, and to improve the methods for treating bites from animals suspected of having rabies.

VEERARAGHAVAN, N., BALASUBRAMANIAN, A. & SUBRAHMANYAN, T. P. (1957). Advances in rabies treatment. An experimental evaluation.—*Bull. World Hlth Org.* 17, 943-962. [French summary. Authors' synopsis modified.] 2833

Using g.pigs the authors investigated recent claims in rabies treatment, their relative merits, and whether they hold true when Indian strains of street virus are used for challenge. Antirabies serum alone, given before or after infection, while prolonging the incubation period, had no saving effect. Serum seemed to confer some protection when it was obtained from animals of the same species which had survived an infection with the same strain of virus. Doses of 5% Semple vaccine comparable to those given to human beings conferred solid protection provided treatment started 7 days before challenge. Combined therapy with serum and vaccine given after infection was of great value under certain conditions. The ratio of serum to vaccine seemed to vary with the quality of the serum and the antigenicity of the vaccine. High egg passage Flury vaccine given before infection gave very good protection. Serum and Flury vaccine administered after infection was of no value.

KITSELMAN, C. H. (1958). The influence of certain antibiotics and acidity on rabies virus.—*J. Amer. vet. med. Ass.* 132, 325-327. [Author's summary modified.] 2834

Oxytetracycline hydrochloride, incorporated in the buffered saline used to emulsify brain tissue, offers a simple, practical antibacterial

agent for use in the routine test animal diagnosis of rabies.

None of the antibiotics studied, either alone or incorporated with sodium sulphadimidine or hyperimmune dog serums, showed viricidal action. The apparent antiviral action of tetracycline hydrochloride was not due to the antibiotic, per se, but rather to its highly acid nature, because an aqueous solution of hydrochloric acid having a similar pH value gave identical results.

MACPHERSON, I. A. (1958). The liberation of cell-bound vaccinia virus by ultrasonic vibration.—*J. Hyg., Camb.* 56, 29-36. [Author's summary modified.] 2835

Ultrasonic vibration is a highly effective means of releasing vaccinia virus from infected tissue-culture cells. The titre of virus obtained from a suspension of infected cells following ultrasonic vibration is closely similar to that obtained by rapid shaking with glass beads. Since these methods are dissimilar in their disruptive action and as the titres are higher than those obtained by other methods such as grinding with sand, grinding in a glass TenBroeck tissue disintegrator and three cycles of freezing and thawing, they may represent the maximum possible yield of virus from these cells.

POWELL, A. K. & PEARSON, A. E. G. (1957). Attempted control of ectromelia in mice.—*Brit. Emp. Cancer Campgn. 34th Ann. Rep.* 1956 p. 148. 2836

The authors continued to protect mice from ectromelia by inoculation of calf lymph vaccine [see also *V.B.* 27, 748]. Maximum response to the vaccine was obtained only in mice aged 5 weeks or more.—R.M.

RICHTER, J. (1958). Enkele onderzoeken naar de houdbaarheid van duivenpoxvirus. [Storage life of pigeon-pox virus.]—*Tijdschr. Diergeneesk.* 83, 211-221. [In Dutch. Summaries in English, French and German, English summary modified.] 2837

The potency of batches of pigeon-pox vaccine was determined after preparation and at the end of the permitted storage period. Titrations were carried out mostly in pullets and cockerels. Vials of vaccine were sealed under a vacuum of 0.02 mm. Hg. The vaccine remained stable for about 3 years at room temp. When the vials were sealed under nitrogen, stability lasted about 2½ years. Dried virus kept at room temp. and exposed to the air was unfit for use a few months later. Virus stored under vacuum, or under vacuum in vials filled previously with nitro-

gen, or under nitrogen, remained stable for less than a month when kept at 37°C., but was stable for about 2½ years when exposed to light at room temp.

CRAWFORD, J. G. (1958). Viability of monkey kidney tissue cultures stored at 5°C.—*Proc. Soc. exp. Biol., N.Y.* **97**, 341-344. [Author's summary modified.]

2838

Monkey kidney tissue cultures survived refrigeration at 4° to 6°C. for up to 6 weeks. Cultures so treated could be returned to an incubator and maintained for 3-4 weeks at 34° to 35°C. Refrigerated cultures retained full sensitivity to poliomyelitis viruses.

DANIELS, J. B. (1958). Hemagglutinin of eastern equine encephalitis virus in chick embryo tissue culture.—*Fed. Proc.* **17**, 508.

2839

In a study of the ecology of Eastern equine encephalitis, virus in specimens of human, horse and bird brains was isolated in chick embryos or chick embryo tissue cultures and identified by the complement-fixation test. Arthropods were tested for virus in tissue cultures. Crude supernatants of infected tissue cultures contained haemagglutinin for the r.b.c. of day-old chicks. Titres of 1/10 to 1/320 in tissue cultures were consistently demonstrable where the E.E.E. cytopathic effect was seen, but not in its absence; the haemagglutinin was inhibited by hyperimmune sera but not by normal sera, both treated to remove non-specific lipid inhibitor. Antihaemagglutinins were present in 4 human cases of E.E.E. in which both complement-fixing and neutralizing antibodies had been shown.

—E.V.L.

REEVES, W. C., HUTSON, G. A., BELLAMY, R. E. & SCRIVANI, R. P. (1958). Chronic latent infections of birds with Western equine encephalomyelitis virus.—*Proc. Soc. exp. Biol., N.Y.* **97**, 733-736. [Authors' summary modified.]

2840

Western equine encephalomyelitis virus was isolated from tissues of 8 of 284 birds at intervals of 1 to 10 months after experimental infection. Isolations were from Brewer's blackbird (*Euphagus cyanocephalus*), cowbird (*Molothrus ater obscurus*), tricoloured blackbird (*Agelaius tricolor*), house finch (*Carpodacus mexicanus frontalis*) and English sparrow. Positive tissues were blood, spleen, liver, lung, brain and gall bladder. The potential importance of birds as long-term reservoirs of virus and sources of vector infection should be determined.

OTTA, J. (1957). Die Komplementbindungsreaktion bei der Meningo-Encephalomyelitis enzootica equorum (Bornasche Krankheit).

[Complement-fixation test in Bornia disease.]

—*Arch. exp. VetMed.* **11**, 235-252.

2841

The c.f. test was not suitable for quantitative assay of virus, because the infectious component of the virus was not identical with c.f. antigen. Only a positive c.f. test was of diagnostic significance. Repeated subcutaneous inoculations of Bornia virus into horses resulted in the formation of c.f. antibody, but serum concentrations of antibody were low. Inactivation of horse and g.pig sera for serological studies by heating was compared with chemical inactivation (1.5% saline for 30 min.); both methods gave similar results. For routine use, antigen concentrated by dialysis was recommended.

—R.M.

HOFER, A. S. (1957). Comunicacion preliminar acerca del estado actual de la anemia infeciosa equina y su diagnostico en Mexico, D.F. [Present position of equine infectious anaemia and its diagnosis in Mexico.]—*Cienc. vet. Mexico* **2**, 352-375.

2842

Following the initial diagnosis of equine infectious anaemia in Mexico in 1954 [*V.B.* **26**, 2867], 380 horses were submitted to complement-fixation tests and 197 sera were positive, 89 negative and 85 doubtful. Typical lesions were found in 25 slaughtered horses.—R.M.

ENGLERT, H. K., GREGOROVÍČ, V. & ŠENK, L. (1957). Die Leberpunktion, ein diagnostisches Hilfsmittel bei der Bekämpfung der infektiösen Anämie der Pferde. [Liver puncture biopsy in the diagnosis of equine infectious anaemia.]—*Dtsch. tierärztl. Wschr.* **64**, 428-431.

2843

Liver biopsy was performed on 122 horses. The method was considered valuable for diagnosis of infectious anaemia when clinical and haematological examinations gave unsatisfactory results.—R.M.

JELEFF, W. (1957). Beitrag zur fötalen Histopathologie des Virusaborts der Stute mit besonderer Berücksichtigung der Differentialdiagnose. [Histopathology of foetuses in equine virus abortion, with special reference to differential diagnosis.]—*Arch. exp. VetMed.* **11**, 906-920.

2844

J. examined 47 foetuses from an outbreak of equine virus abortion in Bulgaria. Specific histological changes were identified in liver, spleen and lungs. Apart from the presence of intranuclear acidophile inclusions, proliferation of epithelioid cells in the liver and necrosis in lymph follicles of the spleen could be accepted as evidence of virus abortion.—R.M.

ELS, T., JEZIERSKI, A., POJER, J., SCOTT, G. R. & WIKTOR, T. J. (1957). La campagne contre la peste bovine en Ituri en 1954. [Control of rinderpest in Ituri (Belgian Congo) using lapinized vaccine.]—*Bull. agric. Congo belge* **48**, 947-960. **2845**

For the control of the 1954 outbreak of rinderpest in Ituri it was decided to use wet lapinized vaccine, as it was easier to prepare than the dried vaccine. Details of production, testing and preservation of the vaccine are given.

In nine weeks 224,577 cattle were vaccinated with satisfactory results. Transient, though sometimes severe, febrile reactions were observed, particularly in young animals. Mouth lesions also occurred 2-4 weeks after vaccination. Diarrhoea, prostration and some mortality were recorded among calves.—T.E.G.R.

I. NAKAMURA, J. (1957). Peste bovine. [Rinderpest.] — *Bull. Off. int. Epiz.* **47**, 542-554. **2846**

II. NAKAMURA, J. (1957). Présentation de tableaux sur la peste bovine à l'Institut Nippon de science biologique le 27 novembre 1957. [Studies on rinderpest immunization in Japan.]—*Ibid.* 555-571. **2847**

I. Prophylactic immunization of cattle in Japan has been suspended since 1955 because of the decreased risk of importing rinderpest and because lapinized-avianized (LA) vaccine could now be produced rapidly when required. Tests of LA vaccine on Japanese Black cattle were reported: vaccinated animals did not develop fever if hyperimmune serum (about 0.25 ml./kg. body wt.) was inoculated at the same time as the vaccine. The stability of freeze-dried vaccine was described, and also the cultivation of LA virus in tissue culture [see also *V.B.* **28**, 2141], and the titration of rinderpest virus by rabbit inoculation.

II. A series of tables demonstrated work done on the preparation and properties of lapinized and LA virus at the Nippon Institute of Biological Science.—R.M.

MACLEOD, W. G., EVANS, S. A. & SCOTT, G. R. (1957). The production of caprinised rinderpest vaccine.—*Bull. epiz. Dis. Afr.* **5**, 313-324. In French pp. 381-386. **2848**

Vaccine is made from the Vom substrain of the original K.A.G. strain of rinderpest virus. When received, the substrain had undergone at least 600 passages in goats; it is stored at -20°C. in vacuum-sealed ampoules as powdered dried infected goat spleens.

Production and testing of a batch of vaccine takes 5 weeks. Goats are inoculated s/c in-

side the thigh with 2.0 ml. of the re-constituted virus and the spleens removed from selected reactors on the fourth day. Spleens are minced and freeze-dried until the final residual moisture-content of the vaccine is 0.5-1%. This vaccine is tested by inoculation of cattle with 2.0 ml. of a 1:20,000 dilution and of g.pigs with 1:100 dilution, the cattle being challenged after 3 weeks with the Kabete "O" strain of virulent rinderpest virus.

By the end of 1956, nearly 70 million doses had been issued and from 1940 the average annual issue was about 4 million doses.

—E.V.L.

MARES, R. G. (1958). Lapinised rinderpest virus.—*Vet. Rec.* **70**, 413. **2849**

M. retracted his previous statement [*V.B.* **28**, 1056] that repeated passage changed the virulence of lapinized virus for rabbits: the phenomenon observed was probably due to inoculation of rabbits with small doses of virus, and not to decreased virulence.—R.M.

RAMSEY, F. K., CHIVERS, W. H., TRAPP, A. L. & WHITEMAN, C. E. (1958). Incidence and mortality of mucosal disease in Iowa.—*Iowa St. Coll. Vet.* **20**, 101-103. **2850**

Factors such as difficulty of diagnosis, incomplete records and insufficient herd observations prevent compilation of complete data in Iowa, but mortality of 5% in individual herds is fairly common and in rare instances mortality has reached 20 to 30%; in the last 6 years the total annual number of deaths definitely reported has averaged about 100. The incidence of the disease has certainly not decreased since 1951.

—E.V.L.

BAKER, J. A., GILLESPIE, J. H., SHEFFY, B. E. & MARSHALL, V. (1958). Simultaneous immunization of cattle against leptospirosis, virus diarrhea, and infectious bovine rhinotracheitis.—*Cornell Vet.* **48**, 207-213. [Authors' summary modified.] **2851**

Six calves were successfully immunized against leptospirosis, virus diarrhea, and infectious bovine rhinotracheitis with a single inoculation of a combined vaccine consisting of the attenuated viral components and *L. pomona* inactivated by alternate freezing and thawing. The viruses did not spread from vaccinated calves by contact.

MCKERCHER, D. G., MCGOWAN, B. & MCCRORY, B. R. (1957). Studies on bluetongue. V. Distribution of bluetongue in the United States as confirmed by diagnostic tests.—J.

Amer. vet. med. Ass. **130**, 86-89. [Authors' summary modified.] **2852**

Immunity tests in sheep confirmed the presence of bluetongue in Arizona, California, Colorado, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, and Texas. Clinical diagnosis indicates a somewhat wider distribution of the disease. The immunity test, as a confirmatory diagnostic procedure for bluetongue, is limited by the difficulty of identifying susceptible test sheep. Recent developments indicate that serodiagnosis of bluetongue may soon be possible.

ZLOTNIK, I. (1958). The histopathology of the brain stem of sheep affected with natural scrapie. — *J. comp. Path.* **68**, 148-166. [Author's conclusions modified.] **2853**

Various degrees of vacuolation and degeneration of neurones were observed in the brain stem in sheep affected with scrapie; degeneration and vacuolation of neurones and astrocytic proliferation in the grey matter were the most constant lesions in both the early and advanced stages. Z. reported various glial and vascular lesions. Perivascular demyelination was of common occurrence in advanced cases. The number of vacuoles in sheep affected with natural scrapie was much higher than in apparently healthy sheep and there was a relationship between vacuolation and the clinical stage of the disease.

HULLAND, T. J. (1958). The skeletal muscle of sheep affected with scrapie.—*J. comp. Path.* **68**, 264-274. [Author's conclusions modified.] **2854**

Skeletal muscles from 30 cases of scrapie, 14 experimentally induced and 16 natural, were minutely examined and compared with muscles from 12 non-scrapie control sheep. Macroscopic lesions were found in one sheep with natural scrapie and minor microscopic changes were found in five others (two natural and three experimental).

It is concluded that scrapie cannot be considered a primary disease of the muscle, and that muscle changes play no apparent part in producing clinical symptoms of that disease.

WEINBREN, M. P., GOURLAY, R. N., LUMSDEN, W. H. R. & WEINBREN, B. M. (1958). An epizootic of Nairobi sheep disease in Uganda. — *J. comp. Path.* **68**, 174-187. [Authors' conclusions modified.] **2855**

An outbreak of disease in sheep at Entebbe, Uganda, is described. The causal agent isolated by the intracerebral inoculation of mice, proved to be a strain of Nairobi sheep disease virus. The

highest concentration of virus was found in the spleen and liver. Infant mice were susceptible by both the intracerebral and intraperitoneal routes of inoculation; adult mice by the intracerebral route only. Except on one occasion, attempts to cultivate the virus in embryonated eggs were unsuccessful.

The histopathological changes induced by the virus were:— in sheep, a glomerulo-tubular nephritis; in mice an encephalitis, most marked in the hippocampus; and, in infant mice a skeletal myositis and myocarditis.

The infection in sheep was accompanied by a marked leucopenia and decrease in total serum protein.

Flying blood-sucking insects were very unlikely to have been concerned in transmission. Ticks of the genus *Rhipicephalus* and *Amblyomma* were present and virus was recovered from *Rhipicephalus* ticks removed from a sheep which subsequently developed and succumbed to the disease.

The clinical pictures of the disease in cases in Uganda and Kenya were compared.

Neutralizing antibody to Nairobi sheep disease virus has been found in the sera of sheep and goats in several other localities in Uganda and also in a human serum.

HANSON, R. P. (1957). Origin of hog cholera. — *J. Amer. vet. med. Ass.* **131**, 211-218. **2856**

Early reports of epidemics, from 1818 to 1840, contain no positive identification of the disease as being swine fever, but the virus may then have existed in pigs as an atypical disease. It might subsequently have appeared in its acute form as a result of cross-breeding with imported pigs and a change in genetics, husbandry and nutrition. The virus might also have been transferred to the pigs from some American reservoir animal, or it might have been imported; though outbreaks were in inland States and not along the Atlantic seaboard. It is not possible to reach a definite conclusion on the available evidence.

—E.V.L.

PEHL, K.-H. & SCHULZE, W. (1957). Die Übertragung des Schweinepestvirus mit dem Impfakt. [Transmission of swine fever virus by means of inoculations.] — *Arch. exp. VetMed.* **11**, 947-950. **2857**

The authors described experiments to test the possibility of accidentally spreading swine fever during vaccination of an infected flock with crystal violet vaccine. 3 different types of syringe were used to inject vaccine into pigs acutely ill with swine fever and immediately afterwards healthy pigs were vaccinated, with or without a change of needle. Infection was

transmitted in several instances in which the same needle was used and in one instance in which needles were changed. It was concluded that this risk could be overcome if the amount of vaccine in the nozzle of the syringe was discharged after removing the used needle and before attaching the new needle. However, this risk was small because it was improbable that an infected pig would be included in those vaccinated. The incubation period of infection by inoculation was 2-4 days.—R.M.

GUALANDI, G. (1957). Ricerche sulla diarrea enzootica da virus filtrabile negli allevamenti suini della Pianura Padana. [Diarrhoea in pigs caused by a virus.]—*Vet. ital.* **8**, 1075-1093. [Summaries in English, French and German.] **2858**

During 1956 and the first four months of 1957 there were 39 outbreaks of the disease among pigs. The disease was characterized by profuse yellowish diarrhoea and inappetence and seemed to be introduced by new purchases (diseased or healthy carriers). The course was 3-10 days followed by recovery. Experimental transmission to healthy pigs was carried out with faeces (or the supernatant fluid) from affected animals administered *per os*, intravenously or intraperitoneally. Lab. animals were not susceptible. Recovered animals were immune and their serum contained neutralizing antibodies against the causal agent, which is believed to be a virus.—T.E.G.R.

SHIMIZU, T., ISHIZAKI, R., KONO, Y., KUMAGAI, T., ARAI, S., SASAHARA, J., ISHII, S. & MATUMOTO, M. (1957). Multiplication and cytopathogenic effect of "the haemagglutinating virus of Japan" (HVJ) in swine kidney tissue culture.—*Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 33, pp. 63-74. [In English. Summary in Japanese pp. 61-62. Authors' summary modified.] **2859**

Propagation and cytopathogenic effect of "the haemagglutinating virus of Japan" in pig kidney tissue cultures were described. Isolation of a variant strain by serial passages in this type of culture was attempted but was unsuccessful. The pathogenicity for mice and embryonated eggs, haemagglutinability, and growth curve of the tissue-culture passage virus were compared with those of the egg-adapted virus. Further development and usefulness of this type of tissue culture were discussed.

SALENSTEDT, C. R. (1958). Studies on the virus of Hepatitis contagiosa canis (HCC). 1. The isolation of HCC-virus from the tonsils of a

dog.—*Arch. ges. Virusforsch.* **8**, 123-130. [In English. Author's summary modified.] **2860**

From a dog, suffering from clinically diagnosed infectious hepatitis, a virus was recovered in dog kidney tissue culture inoculated with a throat swab specimen. The virus was identified as that of canine virus hepatitis in cross-serological tests against four American strains. No immunological differences between the five strains were demonstrable.

LARIN, N. M., SKULSKI, G. & ORBELL, W. G. (1958). Canine virus hepatitis in suckling puppies.—*Brit. vet. J.* **114**, 112-119. [Authors' summary modified.] **2861**

New-born puppies were susceptible to canine hepatitis virus. Infection was not followed by severe illness or death invariably, owing to differences in susceptibility depending on age, the milk of the dam and falls in post-natal body temp. Tissue lesions differed considerably from those usually seen in weaned dogs. The significance of the findings is discussed.

SKULSKI, G. (1958). The relationship of hepatic necrosis to the appearance of jaundice in canine virus hepatitis.—*Brit. vet. J.* **114**, 47-48. **2862**

Histopathological examination of liver specimens from 24 fatal cases of canine virus hepatitis revealed extensive loss of parenchymal hepatic cells due to centrilobular and peripheral necrosis in the seven cases which had exhibited jaundice. These lesions were not observed in the non-icteric cases.—E.V.L.

LARIN, N. M. (1958). Epidemiological studies of canine virus hepatitis (Rubarth's disease).—*Vet. Rec.* **70**, 295-297. [Author's summary modified.] **2863**

Canine virus hepatitis is endemic in many parts of Gt. Britain. Serological findings suggest that the majority of infections are either symptomless or so mild as to escape attention. Extensive tissue lesions, however, have been found in every case of the symptomless infection, indicating that it is a possible background complicating other canine diseases.

EMERY, J. B. & YORK, C. J. (1958). Propagation of infectious canine hepatitis virus in porcine kidney tissue culture.—*Science* **127**, 148. **2864**

A method was described of propagating canine hepatitis virus in pig-kidney epithelial cells, using a modified virus which had undergone 134 passages in dog-kidney tissue cultures. Titration of the virus through 38 pig-kidney

passages ranged from $10^{4.5}$ to $10^{5.5}$; the affected cells became swollen, rounded-up and highly refractile. Epithelial sheets broke up and the cells formed small, grape-like clusters. Serum neutralization tests were made to identify the cytopathogenic agent in pig-kidney tissue at various passage levels: further tests were carried out in 14 dogs, which developed specific antibodies to infectious canine hepatitis virus. Lack of illness in the inoculated dogs indicated that the virus was of modified virulence and could be used for preparation of a vaccine.

—E.V.L.

CRANDELL, R. A. & MAURER, F. D. (1958). Isolation of a feline virus associated with intranuclear inclusion bodies.—*Proc. Soc. exp. Biol., N.Y.* **97**, 487-490. [Authors' summary modified.]

2865

A viral agent cytopathogenic for feline kidney tissue culture was isolated from a cat with a respiratory infection. It was capable of reproducing the illness in susceptible kittens with the development of specific neutralizing antibodies. Intranuclear inclusions were demonstrated in tissue culture preparations and in kittens in which the disease was reproduced. The agent survived freeze-drying and storage in tissue culture fluid for at least 3 months at -60°C .

MANSI, W. & THOMAS, V. (1958). Serological investigations in the study of myxoma and fibroma viruses. II. The gel diffusion precipitin test.—*J. comp. Path.* **68**, 188-200. [Authors' conclusions modified.]

2866

This paper describes the application of the gel diffusion precipitin test to the study of the myxoma virus antigen-antibody reaction. It has been possible by this technique to examine sera or tissues for the presence of antigen or antibody or both at the same time. Some of the properties of the precipitin antigen and antibody are reported.

The appearance and persistence of the precipitin antibody in myxoma infected rabbits was studied.

A suggestion is made for the identification of the type and stage of infection in myxoma infected rabbits based on characteristic precipitin patterns produced by serum and tissues.

The antigenic identity of the different types of myxoma virus is reported.

KILHAM, L. (1957). Transformation of fibroma into myxoma virus in tissue culture.—*Proc. Soc. exp. Biol., N.Y.* **95**, 59-62.

2867

The transformation of fibroma into myxoma virus has been demonstrated before in rabbits

[V.B. **6**, p. 715]. K. showed that the transformation could occur in tissue cultures of rabbit testicle and kidney.—R.M.

DALMAT, H. T. (1958). Passage of Shope's rabbit fibroma virus through one-day-old mice.—*Proc. Soc. exp. Biol., N.Y.* **97**, 219-220.

2868

Day-old mice were inoculated intracerebrally with 0.1 ml. of a 10% suspension of domestic rabbit tumour tissue. After 4, 7, 16 and 31 days, mouse brain suspensions were prepared in dilution for inoculating mice intracerebrally or rabbits intradermally. Tumours resulted in all rabbits except the one inoculated with the mouse brain infected for 16 days. The mouse to mouse passages were unsuccessful except in one series in which 3 serial passages were accomplished; attempts to establish the virus by intradermal and s/c inoculation into mice were unsuccessful.—E.V.L.

POLLARD, M. & BUSSELL, R. H. (1957). Complement fixation with mouse hepatitis virus.—*Science* **126**, 1245-1246.

2869

Complement-fixing antigen extracted from liver tissue of mice experimentally infected with mouse hepatitis virus appeared to be specific and relatively tolerant of desiccation, heating, ether and benzene. The relatively virus-free supernatant fluid, following ultracentrifugation, was a better antigen than the re-suspended virus-containing sediment. Failure to sediment the complement-fixing antigen along with the virus seemed to indicate that the antigen was a soluble one.—E.V.L.

HALLAUER, C. & KRONAUER, G. (1958). Züchtung und Abwandlung von klassischem Geflügelpestvirus in Explantaten des menschlichen Carcinomstammes HeLa. [Cultivation and transformation of classical fowl plague virus in explants of HeLa cells.] — *Arch. ges. Virusforsch.* **8**, 95-112.

2870

The "Brescia" strain of fowl plague virus was adapted to human carcinoma cells of the strain HeLa and was passaged 75 times. Prolonged passage resulted in a variant of decreased infectiousness and complete apathogenicity for fowls, which in its biological properties closely resembled the naturally occurring mutant "Virus N" [V.B. **25**, 3663].—R.M.

WATERSON, A. P. (1958). Some factors affecting the formation of plaques by fowlplague virus in chick embryo cells.—*Arch. ges. Virusforsch.* **8**, 113-122. [In English. Author's summary modified.]

2871

In agar suspensions of chick embryo cells,

fowl plague virus forms plaques in numbers directly proportional to the quantity of inoculum. The plaque count is not affected by allowing time for adsorption of virus before mixing with the agar. With about a quarter of the optimal cell population, plaques are visible but are less distinct and fewer. Many batches of neutral red are toxic to the cells, and either destroy them or reduce the plaque count. The count is affected by differences in the material used to enrich the agar, chick embryo extract proving better than a mixture of various biological materials. With sufficient cells, agar enriched with chick embryo extract, and four days' incubation, the counts of plaque-forming units were consistent and reproducible, and were approx. 1.1×10^9 plaque-forming units per ml. of the allantoic fluid seed used. The relation of plaque-forming units to egg-infective units was about one to four.

ŻEBROWSKI, L. (1957). Badania nad zmiennością chorobotwórczości wirusa rzekomego pomoru drobiu (Newcastle) II. Wpływ metabolizmu zarodków kurzych na zmienność chorobotwórczości. [Virulence of Newcastle disease virus. II. Effect of metabolism in chick embryos.]—Roczn. Nauk rol. Ser. E. 68, 39-47. [In Polish. Summaries in English and Russian.] 2872

Newcastle disease virus was passaged 25 times through 3 groups of 11-day-old chick embryos. In the first group the metabolic rate of the embryos was increased by injecting 1000 i.u. penicillin per egg and in the second group it was lowered by injecting 0.25 mg. of chloramphenicol. The third group was an untreated control. Virus passaged through the second group lost its virulence much sooner than in the other two.—M. GITTER.

STEFANSKI, W. & ŻEBROWSKI, L. (1958). Investigations on the transmission of Newcastle disease virus by *Ascaridia galli* and the pathogenic synergism of both agents.—Bull. Acad. polon. Sci. Cl. II. 6, 67-72. [In English.] 2873

Forty chickens, 5 weeks old, were each infected *per os* with 150 eggs of *A. galli*; random sampling on the 40th, 45th, and 50th day showed adequate infestation. The chickens were then infected with Newcastle disease virus and as they died, the nematodes were removed and virus was isolated from them but not from their eggs. A second experiment with 2 groups each of 37 chickens showed, surprisingly, the survival time of infested chickens to be longer than that of controls, following infection of both

groups with Newcastle disease virus. It was concluded that while *A. galli* is not a true vector of Newcastle disease, it might nevertheless favour perpetuation of the virus within a given area.

Extracts of the nematodes had no effect *in vitro* on the virus and therefore a possible explanation of the increased survival time may be that infestation, by interfering with the normal metabolism of the chicken, creates abnormal conditions for multiplication of the virus.—E.V.L.

REUSS, U. (1957). Untersuchungen über die Methodik einer Desinfektionsmittelprüfung am Virus der atypischen Geflügelpest. [Method of testing the effect of disinfectants on Newcastle disease virus.]—Berl. Münch. tierärztl. Wschr. 70, 293-295. [Summary in English.] 2874

R. demonstrated that embryonated eggs could be readily infected by means of the insertion of hypodermic needles which had been in contact with infective allantoic fluid. Disinfectants were tested by placing contaminated needles in disinfectant before inserting them into eggs. By this method it was shown that the virus was killed by 10 min. exposure to 3% formaldehyde soln. or 1% "Havisol" or 1% "Gevisol"; and by 20 min. exposure to 1% "Mefarol" or 0.5% "Bradosol".—R.M.

LUCAS, A. & LAROCHE, M. (1957). L'encéphalomyélite aviaire à virus en France. [Avian encephalomyelitis in France.]—Bull. Acad. vét. Fr. 30, 359-362. 2875

A diagnosis of virus encephalomyelitis in fowls was based on clinical symptoms, P.M. findings, histological changes and negative results of bacteriological and parasitological examination and of haemagglutination-inhibition tests for Newcastle disease. The causal agent was not isolated and transmission experiments were not carried out.—T.E.G.R.

SIMPSON, C. F. (1957). Encephalomyelitis (epidemic tremor) of chicks.—Ann. Rep. agric. Exp. Sta., Univ. Fla., 1956 pp. 146-147. 2876

Chicks aged 2-3 weeks were involved in seven outbreaks investigated. Perivascular cuffing was observed in sections of the cerebrum and cerebellum and degeneration of the Purkinje cells was a constant lesion. Sterile suspensions of brain, lung, liver or gonad from chicks with clinical symptoms caused the death of 9-day-old chick embryos 48-96 hours after injection into the allantoic cavity. The causal agent caused the death of chicks within 6 days after intracerebral inoculation.—T.E.G.R.

- SUMNER, F. W., JUNGHERR, E. L. & LUGINBUHL, R. E. (1957). Studies on avian encephalomyelitis. I. Egg adaptation of the virus.—*Amer. J. vet. Res.* **18**, 717-719. **2877**
 SUMNER, F. W., LUGINBUHL, R. E. & JUNGHERR, E. L. (1957). Studies on avian encephalomyelitis. II. Flock survey for embryo susceptibility to the virus.—*Ibid.* 720-723. **2878**

I. Egg adaptation of the virus of infectious avian encephalomyelitis was achieved by intra-ocular inoculation of chick embryos. Convalescent serum from artificially infected birds protected embryos to a greater extent than it did chicks. This formed the basis of a serum - virus neutralization test for which 9 days were needed as compared with 2-4 weeks using chicks.

The authors also succeeded in infecting chick embryos by inoculation of virus into the chorio-allantoic chamber.

II. The virus was titrated by the intra-ocular inoculation of chick embryos from 119 breeding flocks. Only four flocks produced embryos which permitted uniform virus growth to titres of 10^{-5} . Virus-neutralizing substances were demonstrated in adult serum, and the serum of progeny and egg yolk from a flock, embryos from which gave virus titres of 10^{1-8} or lower. It is important to choose carefully sources of supply of embryonated eggs for working with this virus.—L. M. MARKSON.

- ISHIGURO, H. (1957). [A transmissible anemia (infectious anemia) of the fowl.]—*Bull. Fac. Agric. Yamaguti Univ., Japan* No. 8. pp. 733-746. [In Japanese. Abst. from English summary.] **2879**

Anaemia in a hen was reproduced by inoculation of whole blood (but not plasma or Chamberland L₂ filtrates) into chicks and 28 serial passages were made in chicks. First signs appeared 14-21 days after inoculation and most birds died after about 35 days of illness. Peripheral blood showed evidence of anaemia, erythroblastosis, anisocytosis. Lesions were enlargement of spleen, liver and gall-bladder; moderate haemosiderosis in spleen and liver; suppression of the erythrocytic series in bone marrow. The condition appeared to differ from erythroleucosis and avian malaria, but its exact nature was not known.—R.M.

- Rossi, C. & PINI, A. (1957). L'epatite da virus degli anatreccoli. Osservazioni e ricerche. [Virus hepatitis of ducks.] — *Vet. Ital.* **8**, 1175-1189. [Summaries in English, French and German.] **2880**

An account of an outbreak of duck virus

hepatitis (the first recorded in Italy) is given. The causal agent set up specific lesions in chick embryos but not in duck embryos. Filtration delayed and reduced embryo mortality and the infective titre of the cultivated virus was lower than that of the natural virus. The virus was neutralized by immune serum. Characteristic liver lesions were observed in hyperimmunized ducks. Susceptibility of the ducklings to the virus decreased with age; after 30 days there was no mortality and high neutralizing titres were demonstrable in their serum; cortisone treatment did not interfere with natural immunity. Histological examination revealed necrosis and fatty infiltration of the liver parenchyma of infected embryos.—T.E.G.R.

- SCHOOP, G. & STAUB, H. (1957/58). Über die Virushepatitis der Enten. I. Mitteilung: Krankheits- und Sektionsbild, Ätiologie. 2. Mitteilung: Epidemiologie. 3. Mitteilung: Die Bekämpfung. [Virus hepatitis of ducks. I. Clinical and post-mortem features and aetiology. II. Epidemiology. III. Control.] — *Mh. Tierheilk.* **9**, 317-322 & 322-328; **10**, 29-35. **2881**

Hepatitis occurred in ducklings on 2 unconnected fattening farms. The causal agent was transmissible by inoculation to ducklings and to chick embryos, and it passed Seitz EK filter. Typical lesions in infected chick embryos were oedema and focal necrosis of liver. The disease was reproduced in ducklings by inoculation of allantoic fluid from infected chick embryos. The causal agent was resistant to a mixture of penicillin and streptomycin.

Over a period of 20 months 1,745 of 9,000 ducklings from 17 hatchings died on one farm, mainly between November and April. The causal agent was excreted in faeces and the disease was probably spread by footwear contaminated with infected faeces. Control could be achieved by rearing ducks in battery cages.

Ducklings were most susceptible to virus hepatitis at 3 weeks of age and were completely resistant at 6 weeks. Serum from convalescent ducks contained large amounts of antibody, demonstrable *in vitro* and *in vivo*. Immune serum from ducks which survived infection was inoculated prophylactically into over 20,000 ducklings and it conferred a high degree of protection. The best time to inoculate was between 1 and 2 weeks of age, but from the 2nd day onwards if deaths were occurring in younger birds.

—R.M.

- LOGRIppo, G. A. (1958). Antigenicity of combined β -propiolactone and ultraviolet inacti-

vated virus vaccines.—*J. Immunol.* **80**, 198-203. [Author's summary modified.] 2882

A comparison is made of the antigenicity of Eastern equine encephalomyelitis and rabies vaccines prepared with β -propiolactone and ultra-violet irradiation used singly and in combination. The advantages demonstrated by the use of the combination are: (a) a marked decrease in the amount of propiolactone required for complete virus inactivation; (b) elimination of the "tailing effect" observed when either agent is used alone; and (c) a marked increase in the margin of safety between the concentration required for complete inactivation and the maximum concentration which does not critically alter the antigenicity of the vaccine.

FAZEKAS DE ST. GROTH, S., WATSON, G. S. & REID, A. F. (1958). The neutralization of animal viruses. I. A model of virus-antibody interaction.—*J. Immunol.* **80**, 215-224. 2883

FAZEKAS DE ST. GROTH, S. & REID, A. F. (1958). The neutralization of animal viruses. II. A critical comparison of hypotheses.—*Ibid.* 225-235. [Authors' summaries modified.] 2884

I. The authors applied the statistical-kinetic theory of reactions to the system of virus and its specific antibody. The mathematical model defines, without any additional assumptions whatever, the rate at which virus-antibody unions are formed and broken, as well as the equilibrium state of the system. Equations covering the effects of dilution, of altering the concentration of any component, and of competition set up between similar reagents are derived and solved explicitly.

Based on this model, the biological action of antibodies is considered in the form of several equally likely alternatives. Choice of the appropriate mechanism of neutralization must rest on experiment.

The methods available for the study of the neutralization of infectivity are shown to carry various systematic errors. The authors discussed the nature and magnitude of these, and proposed means by which they can be either avoided or accounted for quantitatively.

II. The experimental data reported by Dulbecco *et al.* [*V.B.* **27**, 457] are used to discriminate between two hypotheses on the

See also absts. 2738 (E. monocytogenes from pigs with swine fever); 3070 (report, Cyprus); 3071 (report, Jamaica); 3074 (report, U.S.A.).

mechanism by which the infectivity of viruses is neutralized.

The orthodox hypothesis of dissociation, as developed above (I) and the non-dissociation hypotheses of Dulbecco *et al.* are found to account equally well for the trivial features of the neutralization process.

At the quantitative level however, the non-dissociation hypothesis becomes incompatible with the experimental evidence on several counts; what it postulates as constants are seen to vary systematically; and its basic assumptions prove to be either inadequate or unnecessary. The dissociation hypothesis is not contradicted at any point by the same evidence.

The tests on which Dulbecco *et al.* base their hypotheses are, for the most part, inconclusive as their results are confounded with the systematic errors of the assay technique; the remainder directly contradicts their hypothesis. The dissociation hypothesis fits this further set of data too.

FERRIS, R. D. & PLOWRIGHT, W. (1958). Simplified methods for the production of monolayers of testis cells from domestic animals, and for the serial examination of monolayer cultures.—*J. Path. Bact.* **75**, 313-318. [Authors' summary.] 2885

Details are given for a simple method of preparing trypsin-dispersed testis cells from domestic animals, particularly calves and pigs. The rapid development of a complete monolayer from such cell suspensions is described.

A simple method is given for the serial examination of developing and infected monolayers grown on coverslips. The application and advantages of this method are discussed.

CASSARD, H. (1957). Traitement de la rickettsiose canine par l'aureomycine. [Treatment of canine rickettsia infection with aureomycin.]—*Rev. Elev.* **10**, 369-370. [Summaries in English and Spanish. English summary copied verbatim.] 2886

7 cases of rickettsiosis in dogs have been confirmed in Brazzaville, French Equatorial Africa, *Rickettsia* being found in large mononuclear cells and clinical signs observed in each case. Six cases out of 7 were successfully treated by a daily administration of 1 g. aureomycin *per os*.

IMMUNITY

SOULSBY, E. J. L. (1957). Some immunological phenomena in parasitic infections.—*Vet. Rec.* **69**, No. 49, Pt. 2, pp. 1129-1136. Discussion:

pp. 1136-1139. 2887

A review of the immunological mechanisms involved in infections with protozoan and

helminth parasites. Ninety-four references are cited.—H. S. McTAGGART.

GARVEY, J. S. & CAMPBELL, D. H. (1958). Effect of secondary injections of antigen upon the retention in liver of a primary injection.—*J. exp. Med.*, **107**, 497-506. [Authors' summary modified.] **2888**

The retention of antigen in rabbit liver tissue, resulting from a primary i/v injection, is influenced by immunization brought about by subsequent i/v injections of the same antigen. In rabbits given a single primary i/v inj. of radioactive antigen, the retention of radioactivity in liver tissue, after a period of 21 days, was greater than when the primary inj. was followed by secondary injections of the same, but non-radioactive antigen. The results were similar for both S^{35} -azohaemocyanin and S^{35} -azo-bovine-serum-albumin, except that the haemocyanin was retained to a greater extent than the albumin.

There was very little if any correlation between the number of secondary injections and retention of the initial injection. Quantitative antibody nitrogen data, obtained for the serum of each rabbit showed, in general an inverse relationship between circulating antibody titre, the lower the retention of radioactivity in liver tissue.

Passively administered homologous antibody did not produce a change in the retention of the primary injection of antigen nor did secondary injections of a heterologous native protein injected according to the same immunization schedule as the homologous azoprotein. From these results it may be concluded that an intracellular antibody-forming activity influences the loss (or retention) of antigen deposited in liver tissue and that the mechanism is immunologically specific.

STEVENS, K. M. & MCKENNA, J. M. (1958). Studies on antibody synthesis initiated *in vitro*.—*J. exp. Med.*, **107**, 537-559. [Authors' summary modified.] **2889**

Ten μ g. of the lipopolysaccharide endotoxin of *Salmonella typhi* was given to rabbits i/v to enhance the subsequent antibody response to an unrelated substance. The spleens were removed 24 hours later, diced, and incubated 1 hour with the antigen, bovine- γ -globulin (BGG), in a protein-free medium. After washing, the tissues either were extracted at once or planted and the fluids and tissues harvested 1 to 3 days later. Antibody was determined by a modification of the Boyden haemagglutination technique.

Small amounts of antibody were synthesized as early as 1 hour after the addition of antigen. The antibody formed could be significantly inhibited with BGG, was not dialysable, and did not sediment at 105,000 g for 2 hours.

Dose-response studies revealed no antibody formation when the BGG concentration was 0.005 or 0.05 mg./ml. The best responses were obtained at concentrations of 0.5 to 5.0 mg./ml. These results were found irrespective of whether the animal had previously received BGG.

40% autologous serum increased antibody formation about ninefold over that secured with protein-free medium or with 40% homologous serum. Antibody formed with this system could be detected by 50% c.f. test, although at much lower titre than found by haemagglutination.

While spleens from rabbits previously given BGG did not produce more antibody than spleens from normal rabbits, they differed in that they produced antibody without the involvement of endotoxin.

Under appropriate circumstances, endotoxin was effective *in vitro* in enabling spleen fragments to produce antibody to BGG.

Cortisone acetate administered to rabbits before the removal of the spleen severely inhibited antibody production *in vitro*. Sodium prednisolone phosphate added *in vitro* showed a similar irreversible effect at concentrations as low as 2×10^{-5} M. Nitrogen mustard inhibited antibody formation at concentrations as low as 10^{-4} M.

VERGE, J., GORET, P., PARAF, A. & VINCENT, G. (1957). Production des anticorps chez le jeune lapin. Action de la somatotrophine hypophysaire. [Production of antibodies in the young rabbit. Action of pituitary somatotrophin].—*Rev. Immunol.*, **21**, 137-143. **2890**

Production of *Salmonella typhi-murium* antibodies was lower and of shorter duration in young (650 g. body wt.) than in adult (1,100 g. body wt.) rabbits. Pituitary somatotrophin, as a single dose of 10 units injected two days before the antigen caused a marked increase in antibody titre in rabbits under 650 g. but not in rabbits over 1 kg.; smaller doses caused little or no increase, while larger doses caused a decrease. It is considered that somatotrophin does not act in a specific manner but possibly through stimulation of protein anabolism, especially globulin synthesis.—T.E.G.R.

SMITH, F., RUTH, H. J. & GRENNAN, M. M. (1958). Antibody production in mice exposed intermittently to radium gamma rays.—*Proc. Soc. exp. Biol., N.Y.*, **97**, 451-453. [Authors' summary modified.] **2891**

Exposure of groups of mice to a radium source providing 8.8 r or 2.2 r per 8-hour day for 51 days resulted in significantly lowered antibody titres. In these experiments the mice were immunized on the third day after the end of the radiation exposure and the serum was sampled on the 5th day after immunization. Antibody titres and leucocyte counts following a single exposure of the mice to an acute X-ray dose 4 days after the end of an intermittent exposure to 450 r of radium gamma rays provided no evidence that the earlier exposure caused an altered radiation sensitivity of either the haematopoietic process or the process of haemolysin production. The possibility that antibody synthesis in response to sheep r.b.c. antigen and leucocyte production are independent processes during the recovery from irradiation is discussed.

WEIGLE, W. O. (1958). The nature of antigen-antibody complexes formed in rabbits during an immune response to bovine serum albumin.—*J. exp. med.* **107**, 653-663. [Author's summary modified.] 2892

The immune elimination of soluble bovine serum albumin following an i/v injection, is accompanied by the appearance of circulating antigen-antibody complexes. The pattern of the appearance of circulating antigen-antibody complexes and the immune elimination of antigen probably depends on the amount of antigen injected, the rate of antibody synthesis and, perhaps, the quality of antibody produced. There is no relationship between the I^{131} antigen-antibody complexes detected during the immune response in rabbits by ammonium sulphate precipitation and the material precipitated from immune sera as a result of treatment with alkali. Alkali-precipitable material present in the serum of rabbits when I^{131} antigen is also present contains at most only traces of the antigen.

I. WEINRACH, R. S., LAI, M. & TALMAGE, D. W. (1958). The relation between hemolysin concentration and hemolytic rate as measured with chromium⁵¹ labeled cells.—*J. infect. Dis.* **102**, 60-73. 2893
 II. WEINRACH, R. S. & TALMAGE, D. W. (1958). The role of antibody in immune hemolysis.—*Ibid.* 74-80. [Authors' summaries modified.] 2894

I. A method is described for labelling r.b.c. with radioactive chromium for the study of immune haemolysis. An examination of the kinetics of haemolysis when complement is added before antibody (complement first system) reveals that haemolysis is a first order

reaction at equilibrium. This indicates that immunologically sheep r.b.c. are nearly homogeneous. A comparison of the kinetic course of haemolysis in the complement first system and sensitized cell system supports a hypothesis of the formation of haemolysable complexes consisting of two or more antibody molecules on adjoining antigenic sites of a single cell. According to this hypothesis, the relatively large and haemolytically efficient antibody molecule haemolyses r.b.c. with a two molecule complex. The small and inefficient molecule, on the other hand, requires 4 molecules to form a haemolysable complex. It is possible that the two different haemolysins in immune sera interfere with each other.

II. A hypothesis of a bimolecular complex of haemolysin which induces haemolysis is presented. It is based on the relation between the concentration of haemolysin and the velocity of haemolysis, the finding of a relatively long lag period in complement first systems compared with sensitized cell systems, the finding of an initial rapid rate of haemolysis followed by a slower logarithmic rate in sensitized cell systems, compared with sensitized cell systems, and a mathematical analysis of the molecules of haemolysin available per cell and the number of Forssman sites per cell. According to this hypothesis, the number of haemolysin molecules involved in the haemolytic event and the turnover time or avidity of antibody for antigen determine the haemolytic efficiency of antibody.

ADAMS, D. J. (1958). The red cell antigens of the horse. Antigens defined by naturally occurring horse isoantibodies.—*J. comp. Path.* **68**, 242-252. [Author's conclusions.] 2895

Previous work on the blood groups of the horse has been complicated by the initial adoption of the ABO nomenclature of man and the subsequent confusion over the relationship between the groups found in the horse and the human ABO system.

The present investigation confirms that 4 main blood groups may be recognised in the horse with the aid of two natural iso-agglutinins which have been called anti-I and anti-II. Group one contains antigen I on the red cells and anti-II in the serum; group two, antigen II on the red cells and anti-I in the serum; group three, antigen I and II on the red cells but neither anti-I nor anti-II in the serum, while group four has neither antigen I nor II on the red cells and both anti-I and anti-II in the serum.

Antigens I and II and their corresponding

iso-antibodies are not related in specificity to the human A and B blood group antigens. As is well known, horse saliva may contain substances specifically neutralizing human anti-A or anti-B, but these substances have no inhibitory action on the iso-agglutinins anti-I or anti-II.

Independent of antigens I and II, no antigens reacting specifically with human anti-A or anti-B could be shown on the red cells of 10 horses examined. On the other hand, independent of the iso-agglutinins anti-I and anti-II individual horse sera may contain antibodies reacting specifically with either or both of the human A or B cell antigens.

ASHTON, G. C. (1957). Serum protein differences in cattle by starch gel electrophoresis. —*Nature, Lond.* 180, 917-919. 2896

The author studied the distribution of 5 different patterns of β_2 -globulin fraction in sera from 352 bulls of 13 breeds. The pattern of serum from a given animal remained the same in samples collected during a year; monozygous twins had the same pattern. Results of 150 matings indicated that inheritance of the patterns was controlled by 5 pairs of linked genes.

—R.M.

BLISS, J. Q. (1958). Plasma incompatibility as a cause of transfusion reactions in dogs. —

See also absts. 2721, 2724-2726 & 2728 (TB.); 2732 (Johne's disease); 2737 (swine erysipelas vaccine); 2743 (E. coli infection); 2749 (effect of heating on bacterial agglutinins in milk); 2752-2764, 2760 & 2762-2763 (brucellosis); 2764 (fowl spirochaetosis); 2773-2774 (tetanus); 2813 (anaplasmosis); 2822 & 2826-2828 (F. & M. disease); 2829 (Aujeszky's disease); 2831 (rabies); 2837 (pigeon pox); 2839 (Eastern equine encephalitis); 2841 (Borna disease); 2845-2849 (rinderpest); 2851 (simultaneous immunization against bovine leptospirosis, virus diarrhoea and infectious rhinotracheitis); 2856-2857 (swine fever); 2866 (gel-diffusion precipitin study of myxoma and fibroma viruses); 2869 (mouse hepatitis); 2882 (β -propiolactone and ultraviolet-inactivated virus vaccines); 2883-2884 (virus neutralization).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

I. ANON. (1958). [Towards improvement in executing control measures for warble flies.] —*Veterinariya, Moscow* 35, No. 3, pp. 5-9. [In Russian.] 2898

II. ANISIMOV, I. N. (1958). [Results of a warble fly eradication campaign in the Stalin oblast.] —*Ibid.* pp. 67-69. [In Russian.] 2899

III. VORONIN, M. V. (1958). [Control of warble flies in the Moscow oblast.] —*Ibid.* pp. 69-72. [In Russian.] 2900

I. Since the introduction of DDT for dressing cattle the overall incidence of warble fly infestation in cattle in the U.S.S.R. had fallen from more than 50% in 1951 to 31.6% in 1957. Success in control was not uniform: the percentage of cattle infested varied from 7.7% in the Ukraine and 12% in Moldavia to 43% in the R.S.F.S.R. and 40% in the Kazakh and

Fed. Proc. 17, 16. [Author's abst. modified.] 2897

In normal mongrel and purebred dogs, a weal always develops after intradermal injection of homologous non-autologous plasma, but not after similar injection of autologous plasma (the animal's own plasma) [V.B. 28, 2184]. To determine whether infused non-autologous plasma also evokes a response different from that of infused autologous plasma, mongrel dogs were twice transfused with 20 ml./kg. of plasma, one transfusion consisting of autologous plasma and one of non-autologous plasma. After every non-autologous transfusion, the recipient animal developed a mild to severe weal; none of these same dogs showed any reaction to autologous transfusion. The expansion of plasma volume averaged only 52% of the volume of infused plasma after non-autologous transfusion, but averaged 103% after autologous transfusion. Reactions to non-autologous transfusion occurred in the presence of red cell compatibility. The situation is thus analogous to that described with regard to weal formation after i/d inj. of non-autologous and autologous plasma, and it is likely that the systemic and cutaneous responses have a similar basis. In further experiments, mepyramine prevented the weal reaction to non-autologous transfusion, and increased the efficiency of non-autologous plasma as a volume expander.

Turkmen republics. The number of warbles per head had been reduced from a maximum of 80 to a maximum of 15.

II. In 1948 it was estimated that 169,000 cattle (78% of total) were infested with warbles and that the annual loss of meat, milk and hides amounted to 36 million roubles. Annual hand dressing with 5-7% DDT in oil reduced incidence to 1.1% of all cattle in 1957.

III. In one district of the Moscow oblast inspection of 6,700 cattle before treatment in March revealed that 3,000 had warbles at an average of 8.5 per head. Adult cattle were each dressed by hand with 300-350 ml. of 3% soln. chlorophos [see V.B. 28, 470] and youngstock with 200-250 ml. Inspection a fortnight after treatment revealed that 98% of warbles had been killed.—R.M.

VAN ASPEREN, K. (1958). Mode of action of organophosphorus insecticides. — *Nature, Lond.* **181**, 355-356. **2901**

Cholinesterase and ali-esterase *in vivo* determinations were made using house-flies (*Musca domestica*) exposed to *o, o*-dimethyl-*o*-2, 2-dichlorovinyl phosphate. Data obtained provided evidence against an essential role of cholinesterase inhibition in the insecticidal action of this compound. Although the overall inhibition values were low, it could not be excluded that stronger inhibition of cholinesterase activity might be occurring at some small but essential part of the nervous system.

—D. S. PAPWORTH.

THOMAS, A. D. & NEITZ, W. O. (1958). Rhipicephaline tick toxicosis in cattle: its possible aggravating effects on certain diseases.—*J. S. Afr. vet. med. Ass.* **29**, 39-50. **2902**

(1) Observations on about 50 young oxen used for heartwater immunizing experiments showed that heavy tick infestation (mostly *Rhipicephalus appendiculatus*) was apparently associated with fluctuating temperatures, swollen, sometimes necrotic lymph nodes, severe anaemia, emaciation and death. Respirations were accelerated and shallow, profuse lacrimation with swelling of the head was apparent, the conjunctiva was intensely inflamed and moist and the ears were markedly swollen and pitted on pressure. The characteristic swellings could be punctured to reveal haemorrhagic lymph exuding from the subcutis.

The condition was complicated by the presence of *Gonderia (Theileria) mutans*, *Babesia bigemina*, *Anaplasma marginale* and *Spirochaeta theileri*. It is suggested that heavy tick infestation may interfere with resistance to pro-

tozoan infection through toxic damage to the reticulo-endothelial system.

(2) Severe infection with *Theileria mutans*, with clinical symptoms, was set up in splenectomized cattle.—S. BRIAN KENDALL.

BALLARINI, G. & PIERESCA, G. (1957). Ricerca parassitologica della acariasi respiratoria nei volatili — acariasi respiratoria in fagiano dorato del Giappone (*Crysolopha picta L.*). [Respiratory acariasis in a Japanese golden pheasant.]—*Nuova Vet.* **33**, 412-420. [Summaries in English, German and Spanish.] **2903**

P.M. examination of a golden pheasant, in which death was due to histomoniasis infestation, also revealed *Cytoleichus nudus* infestation of the respiratory tract.—T.E.G.R.

SZWBOWICZ, A., MIĘDZOBRODSKI, K. & DONI-GIEWICZ, K. (1957). Toksyczność rozkruszka małcznego (*Tyroglyphus farinae*) dla zwierząt. II: Doświadczenia na koniach i owcach. [Toxicity of *Tyroglyphus farinae* for animals. II. Experimental research in horses and sheep.]—*Méd. vét. Varsovie* **13**, 722-724. [In Polish. Summaries in English and Russian.] **2904**

Five working horses were each fed daily, for 2 weeks, 54,000 live *T. farinae* and one 18-year-old gelding received a single dose of 364,000 of these parasites. Apart from increased appetite no effect was noted. In the second part of the experiment 10 sheep, 5 of them pregnant ewes, were each fed daily for 2 weeks 10,800 live parasites and two other pregnant ewes each received a single dose of 72,800. Again the animals' health was not disturbed and 9 of them gained in weight. [See also *V.B.* **28**, 792.]—M. GITTER.

See also absts. 3069 (report, New Zealand); 3070 (report, Cyprus); 3071 (report, Jamaica).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

KOTLAN, A. (1957). Epidémiologie et prophylaxie générale de la distomatose. [Epidemiology and control of fascioliasis.]—*Bull. Off. int. Epiz.* **48**, 486-495. [Summary in English.] **2905**

A discussion of the problems of control of fascioliasis in relation to the epidemiology of the disease and the biology and ecology of the intermediate host.—H. S. McTAGGART.

POPOV, A. (1957). La distomatose en Bulgarie. [Fascioliasis in Bulgaria.] — *Bull. Off. int. Epiz.* **48**, 496-502. **2906**

A report of the incidence of fascioliasis in

Bulgaria where the disease is of considerable economic importance. A planned programme of dosing and control measures has greatly reduced the mortality from the disease.

—H. S. McTAGGART.

TEUSCHER, E. (1957). Eine neue praktische Flotationsmethode für den koprologischen Nachweis der Leberegelieier. [New flotation method for the identification of liver fluke eggs in faeces.]—*Schweiz. Arch. Tierheilk.* **99**, 523-528. [Summaries in English, French and Italian.] **2907**

Good flotation of liver fluke eggs was ob-

tained when the following solution was added to a suspension of faeces: 80 g. zinc sulphate, 25 g. sugar in 100 ml. water (specific gravity 1.34).—R.M.

HUYGELEN, C. (1957). Le traitement d'un cas de bilharziose canine à *Schistosoma rodhaini* par un dérivé du thioxanthone. [Treatment of *Schistosoma rodhaini* infection in dogs.] — *Ann. Soc. belge Méd. trop.* 37, 993-997. [In French. Summaries in English, Flemish, German and Spanish.] **2908**

A dog with *Schistosoma rodhaini* infection was successfully treated with stibophen—by injection over a period of five weeks. A second case was successfully treated with "thioxanthone" (1-methyl-4-β diethylamino-ethylamino-thioxanthone) in doses of 70 mg./kg. body weight administered *per os* daily for 7 days.

—T.E.G.R.

TRAWINSKI, A. (1957). La cysticercose chez les animaux et chez l'homme et spécialement la cysticercose du cerveau. [Cysticercus infection in man and animals.] — *Bull. Off. int. Epiz.* 48, 191-198. [Summary in English.] **2909**

A description of the cysticercoses due to larvae of taenioid tapeworms and *Diphyllobothrium latum* occurring in domestic and game animals and fish and of the effects on man of the adult parasites. Methods of diagnosis and prophylaxis are outlined.—H. S. McTAGGART.

TALAVERA, J. (1957). La cysticercose chez les animaux et chez l'homme et plus particulièrement la cysticercose cérébrale. [Cysticercosis, especially of the brain, in man and animals.] — *Bull. Off. int. Epiz.* 48, 584-604. **2910**

T. discusses the problems arising in Spain as a result of *Cysticercus cellulosae* in the pig, *C. bovis* in cattle and cysticercosis, particularly of the brain, in man.—H. S. McTAGGART.

WRAY, J. R. (1958). Note on human hydatid disease in Kenya.—*East. Afr. med. J.* 35, 37-39. **2911**

In spite of the high incidence of hydatidosis in slaughter animals in Kenya [see V.B. 27, 2436], only 117 human cases were reported from African hospitals in the Colony between 1952 and 1955. Pastoral tribes had the highest incidence of cases. It is suggested that the jackal and the hyena, but not the dog, are the main hosts of the parasite in Kenya.—M.G.G.

DINNIK, J. A. & DINNIK, N. N. (1958). Observations on the development of *Haemonchus contortus* larvae under field conditions in the

Kenya Highlands. — *Bull. epiz. Dis. Afr.* 6, 11-21. [Summary in French pp. 69-70.] **2912**

The authors studied the development of the larvae of *H. contortus* under the special conditions of Kabete in Kenya where there is a great diurnal variation in temperature. They found that there was no development if the mean maximum temp. was below 74°F. and the mean minimum temp. below 54°F. A monthly rainfall of at least 2 in. appeared to be necessary for sufficient larvae to develop to give rise to outbreaks of haemonchosis.

—J. F. MICHEL.

THIER, L. (1957). Versuche über die Verwendbarkeit des Hexylresorcins als Anthelminthicum beim Hund. [Use of hexylresorcinol as an anthelmintic in dogs.] — *Inaug. Diss., Munich* pp. 51. **2913**

Hexylresorcinol administered orally (5 mg. per kg.) was only moderately active against roundworms and poorly active against hook-worms. In 2 dogs the drug apparently caused acute enteritis and necrotic areas were found on the gastro-intestinal mucous membrane.—R.M.

PARFITT, J. W. & MICHEL, J. F. (1958). *Nematodirus battus* in cattle.—*Vet. Rec.* 70, 71. **2914**

The authors reported the findings of eggs of *N. battus* in the faeces of several calves grazing an experimental paddock which had been grazed by calves only and no sheep had had access to it, and the recovery of adult male and female specimens of the worm from the small intestine of one of the calves after slaughter.

—H. S. McTAGGART.

COPP, F. C., STANDEN, O. D., SCARNELL, J., RAWES, D. A. & BURROWS, R. B. (1958). A new series of anthelmintics.—*Nature, Lond.* 181, 183. **2915**

This is a preliminary communication concerning a new series of compounds which have been found effective against a wide range of gastro-intestinal nematodes, including certain species of economic importance such as *Nematodirus* in lambs, for which there has hitherto been no satisfactory treatment. These compounds are of particular interest as they appear to be more effective against the mucosa-dwelling species than against those living more freely in the lumen. The full range of activity has yet to be established, but a subsequent paper (Rawes & Scarnell, 1958) [see next abstr.] deals with the efficiency of one of this group of drugs, bephenum embonate, against *Nematodirus* in lambs.

—H. S. McTAGGART.

RAWES, D. A. & SCARNELL, J. (1958). Observations on a new anthelmintic (bephenium embonate): its use against *Nematodirus* in lambs.—*Vet. Rec.* **70**, 251-255. [Authors' summary modified.] **2916**

A new anthelmintic, bephenium embonate, effective against larval and adult stages of *Nematodirus* spp. is described. Details are given of the methods used and of the results obtained in assessing its efficiency. A dosing routine likely to be effective for prophylaxis is suggested.

SIMPSON, C. F., WADE, A. E., DENNIS, W. R. & SWANSON, L. E. (1957). Pathological changes associated with *Dictyocaulus viviparus* (Bloch) infections in calves.—*Amer. J. vet. Res.* **18**, 747-755. **2917**

Initial infections were studied in 3 calves each given 5,000 larvae over a period of 5 days, and in 3 others each given 70,000 larvae over 4 days. Recovered cases were studied in two calves, one naturally infected and the other experimentally infected with 50,000 larvae over 4 days. Recovered and challenged infections were also studied in two calves, one initially infected with 12,000 larvae and challenged at the time of recovery with a single dose of 33,000 larvae, the other initially infected with 61,000 larvae and subsequently challenged with 68,000 larvae followed by another 14,000 eight days later. A description is given of the clinical changes and of the macroscopic and microscopic pathological changes associated with the three forms of infection.—J. ROSE.

KASSAI, T. (1957). Vizsgálatok a juhok gócos tudőférgességéről. VI. rész. Laboratóriumi módszer a juhok tüdőférgességeinek életben való megállapítására. [Lungworm infestation in sheep. VI. Laboratory diagnosis.]—*Mag. állator. Lapja* **12**, 226-231. [In Hungarian. Summaries in English and Russian.] **2918**

The author found the glass sedimentation method described by Baermann more reliable than the drop method of Vajda, for both the quantitative and qualitative demonstration of lungworm species *in vivo*, in a series of comparative experimental tests on 7 infected sheep. He also gave an account of recent Russian results in serological methods for diagnosis of lungworm infestation which are thought of as being insufficiently specific, yet encouraging, especially in the case of the complement-fixation and intradermal tests for *Dictyocaulus filaria*.

—A. SEBESTENY.

WALLEY, J. K. (1957). A new drug, cyanacet-hydrazide, for the oral and subcutaneous

treatment of lungworm disease in animals.—*J. Amer. vet. med. Ass.* **131**, 539-544. **2919**

This is a shortened version of the original communication [See *V.B.* **28**, 1127].

—H. S. McTAGGART.

MICHI, V. (1958). L'ascaridiosi dei cavalli. [Treatment of ascarid infestation in horses.]—*Veterinaria, Milano* **7**, 14-18. [Summaries in English, French and German.] **2920**

Satisfactory results were obtained with piperazine-carbon disulphide complex at 100 mg./kg. body wt.—T.E.G.R.

KADENATSII, A. N. (1955). [A new agent causing 'staggers' in sheep.]—*Karakulevodstvo i Zverovedstvo* **8**, 53-54. [In Russian.] [Abst. in *Helminth. Abstr.* **24**, 316 (1955) modified.] **2921**

"Staggers" caused by *Setaria marshalli* infections was observed on a sheep farm. 10% of the animals had their heads twisted to one side, others had paresis of the pelvic limbs, weakness of the loins and a staggering gait, the more severe cases falling to the ground and kicking but unable to rise. In some, sluggishness and indifference to food and surroundings resulted in death 2-3 weeks after the first appearance of symptoms. 70-75% of the less severe cases partially recovered. P.M. examination of 2 sheep revealed *Setaria* under the cerebral membrane. Diagnosis is made difficult by the similarity of the symptoms to those of coenuriasis, *i.e.*, its occurrence in August and September, should be taken into account. K. showed that the intermediaries are *Culex pipiens* and *Aedes* sp., that the *Setaria* larvae moult twice within 32-35 days in the mosquito and can then infect the final host, becoming adult in 8-10 months. In experimentally infected lambs and kids *Setaria* was found in the brain and abdominal cavity, but only in the abdomen in calves.

LEIPER, J. W. G. (1958). The anthelmintic activity of dithiocarbamates against *Ascaridia* and *Nematodirus*.—*Vet. Rec.* **70**, 273-277. [Author's summary modified.] **2922**

Tests with dithiocarbamates and related compounds showed that *n*-butyl *N*-phenyldithiocarbamate is outstanding in anthelmintic activity against *Ascaridia galli* in fowls and 3 common *Nematodirus* species in sheep. Critical tests, worm counts P.M., and egg counts revealed its efficiency against *Nematodirus* in 25 lambs at dose rates of 50 to 500 mg. per kg. It is recommended that this anthelmintic be administered

at 100 mg. per kg. alone or with phenothiazine during the first half of May to control *Nematodirus* and other common nematodes of lambs.

See also absts. 2873 (transmission of Newcastle disease by *A. galli*); 2887 (immunology); 3067 (report, Northern Ireland); 3070 (report, Cyprus); 3071 (report, Jamaica).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

SIGURDSSON, B. (1958). Adenomatosis of sheep's lungs. Experimental transmission. — *Arch. ges. Virusforsch.* **8**, 51-58. [In English. Author's summary modified.] **2923**

Infectious adenomatosis of sheep's lungs (Jaagsiekte) was transmitted to two of four sheep using material from diseased lungs which had been kept frozen for 52 months. The infectious agent was sedimented twice in the ultracentrifuge in order to wash it of some soluble substances and concentrate it slightly. The extract was inoculated directly into the lung, into the trachea and intranasally. The experiment was terminated after 14 months and at that time typical lesions were found, but they were small and seemed to be at an early stage.

STÜNZI, H. & PERLSTEIN, Z. (1958). Über Hirngeschwülste bei Hund und Katze. [Neoplasms of the brain in dogs and cats.]— *Schweiz. Arch. Tierheilk.* **100**, 139-157. [Summaries in English, French and Italian. English summary modified.] **2924**

During the last $3\frac{1}{2}$ years the authors examined 9 gliomata, 1 meningioma, 1 doubtful pinealoma and 1 adenoma of the hypophysis. Seven tumours were found in dogs of various age, breed and sex. One astrocytoma was observed in a cat, 3 astrocytomata in cattle and 1 astroblastoma in a roe-deer. The seven brain tumours in dogs were diagnosed as follows 1 meningioma, 1 pinealoma (?), 1 adenoma of the hypophysis, 2 astroblastomata, 1 astrocytoma and 1 medulloblastoma. Of the various gliomata a typical case of each kind is described, and clinical data are given as far as possible. In the same period only a single case of secondary brain tumour was found (metastasis of a lung carcinoma) in a dog. Descriptions of further cases are desirable from the clinical as well as the histopathological standpoint.

HEAD, K. W. & WEST, G. B. (1958). Pathological and pharmacological examination of a canine tumour of the adrenal medulla.— *J. comp. Path.* **68**, 167-173. [Authors' conclusions modified.] **2925**

The pathology of a phaeochromocytoma of the right adrenal gland of a 14-year-old dog is described. Pharmacological analysis of the tum-

A second dose may be given 3 to 4 weeks later to protect the lambs during the period of susceptibility to *Nematodirus*.

our showed that 99% of the catechol amine fraction consisted of noradrenaline, the composition of the tumour thus resembling that of the foetal adrenal medulla.

MITCHELL, J. S. & SILVER, I. A. (1957). A study of the treatment of inoperable malignant tumours in dogs.— *Vet. Rec.* **69**, No. 49, Pt. 2, pp. 1376-1385. Discussion: pp. 1325-1386. **2926**

A discussion on veterinary applications of X-ray therapy of tumours illustrated by an account of treatment of various tumours in 7 dogs.—R.M.

MOULTON, J. E. & BOSTICK, W. L. (1958). Canine malignant lymphoma, simulating Hodgkin's disease in man. — *J. Amer. vet. med. Ass.* **132**, 204-209. [Authors' summary modified.] **2927**

Malignant lymphoma in a dog is reported, simulating Hodgkin's disease in man. The case is of interest because of the rarity of this condition in dogs and because of a pre-existing lesion of the foot, which may have drained into the regional lymph nodes, which subsequently became neoplastic. Grossly and microscopically, the lesions possessed the necessary criteria for a diagnosis of Hodgkin's disease in man. Previously reported cases of Hodgkin's disease in dogs are reviewed.

TRUM, B. F. & CARLL, W. T. (1957). Lymphatic leukemia in a hog following atomic exposure to gamma radiation. A case report.— *J. Amer. vet. med. Ass.* **131**, 448-451. **2928**

The pig was one of a group of 56 which had been exposed to 50 r of gamma radiation daily until they died, after about 200 days. There was no evidence of leukaemia in the other pigs.—R.M.

SIMPSON, C. F., ANTHONY, D. W. & YOUNG, F. (1957). Visceral lymphomatosis in a flock of turkeys.— *J. Amer. vet. med. Ass.* **130**, 93-97. [Authors' summary modified.] **2929**

An account of the gross and microscopic pathology of visceral lymphomatosis in a flock of turkeys. Tumours were consistently seen in the spleen, liver, and kidneys of affected birds.

Occasionally, neoplastic growths were also observed in, or in close contact with, the genital organs. Tumour involvement of the pancreas, heart, and gastro-intestinal tract was also observed in some cases. All lesions were composed of dense masses of lymphoid cells, many of which exhibited mitotic figures. This helped to characterize the lesions as neoplastic rather than inflammatory.

LARUELLE, L., GEURDEN, L., REUMONT, M. & DEVOS, A. (1957). Étude comparée de la poliomérite et de la neurolymphomatose. [Comparative study of poliomyelitis and neurolymphomatosis.] — *Med. Veeartsenij-school Ghent* 1, No. 3. pp. 3-18. [In French. Summaries in English, German, Spanish and Flemish.] **2930**

In the opinion of the authors there was no pathological or histological relationship between avian neurolymphomatosis and human poliomyelitis. On the other hand, neurolymphomatosis in two human beings was histologically very similar to avian neurolymphomatosis. (17 plates of photomicrographs).—R.M.

I SHARPLESS, G. R., DEFENDI, V. & COX, H. R. (1958). Cultivation in tissue culture of the virus of avian lymphomatosis.—*Proc. Soc. exp. Biol., N.Y.* 97, 755-757. [Authors' summary.] **2931**

II. FONTES, A. K., BURMESTER, B. R., WALTER, W. G. & ISELER, P. E. (1958). Growth in tissue culture of cytopathogenic agent from strain of virus which produces avian lymphomatosis.—*Ibid.* 854-857. **2932**

I. An agent has been cultivated in tissue culture from avian lymphomatous liver filtrates which can be passaged serially in chick embryo liver cells and which induces cytopathological changes. It induces in 12-day-old chick embryos a disease histologically resembling lymphomatosis. In chicks it has induced lymphomatosis in 20% to 55% of the birds in 9 months, and an agent similar to the original agent has been recovered from some of the diseased livers. [See also *V.B.* 28, 2223-24.]

II. A cytopathogenic agent isolated from RPL 12 in chicken embryo liver tissue cultures is reported. The virus produces a marked CPE on liver parenchymal cells. Virus serially passed in tissue culture, when inoculated into susceptible chicks, produced visceral lymphomatosis. Neutralization tests with antiserum against RPL 12 indicate a relationship of tissue culture virus with RPL 12; however, positive identity of the cytopathogenic agent with the virus causing visceral lymphomatosis has not been established. Antiserum to a virus of similar origin, but propagated *in vitro* at another laboratory, neutralized the above-mentioned tissue cultured virus at high dilutions.

NUTRITIONAL AND METABOLIC DISORDERS

HUSSAIN, A. & HALEEM, A. (1957). Feeding cottonseed cake (whole pressed) and berseem hay meal to laying pullets in Pakistan.—*Pakist. J. Sci.* 9, 31-35. **2933**

Rhode Island Red pullets produced 170-180 eggs per bird when fed a ration containing cotton-seed cake (20%), berseem hay meal (15%), dried wheat crumbs (55%) and a little dried cow dung, buttermilk, limestone, salt and green food. When the eggs were stored for more than 30 days they were liable to develop the discolouration of the yolk, characteristic of the feeding of cotton-seed cake.—E. J. CASTLE.

CARPENTER, K. J. (1958). A note on the chemical composition of fish meals used in a hatchability experiment.—*J. agric. Sci.* 50, 113. **2934**

The fish meal producing the lowest hatchability in a previous experiment [*V.B.* 28, 2556] was analysed. This showed that the content of crude protein, ash, moisture, sodium chloride and available lysine was similar to that of the other three meals used in the experiment, but

ether extract and N-free extract were higher. The oil content was in excess of the legal limit.

—E. J. CASTLE.

MCCLURE, T. J. (1958). Temporary nutritional stress and infertility in mice.—*Nature, Lond.* 181, 1132. **2935**

No fertile matings took place when 18 female mice were subjected to three 48-hour periods of starvation separated by two 48-hour periods of normal feeding.—E. J. CASTLE.

MCCLENDON, J. F., GERSHON-COHEN, J. & BRODY, H. (1958). Absence of gastro-intestinal lesions in rats following ingestion of silica.—*Proc. Soc. exp. Biol., N.Y.* 97, 380-381. [Authors' summary modified.] **2936**

Powdered silica or silica fibres, fed to rats as 10% of the diet for 3 months, produced no tissue lesions in the gastro-intestinal tract, liver, spleen, pancreas, adrenals, lung or mesenteric lymph nodes.

COOK, C. W., THORNE, J. L., BLAKE, J. T. & EDLEFSEN, J. (1958). Use of an esophageal-

fistula cannula for collecting forage samples by grazing sheep.—*J. Anim. Sci.* 17, 189-193. [Authors' summary modified.] **2937**

A new technique for collecting herbage samples by means of sheep equipped with oesophageal-fistula cannulae is described. Several fistulated sheep were used to collect forage samples representative of ingested material. Other sheep were used to collect liquid and solid excreta in collecting bags. Thus by using the lignin-ratio procedure the digestibility of range forage can be determined.

JOHNS, A. T., MANGAN, J. L. & REID, C. S. W. (1957). **Bloat.**—*N.Z. vet. J.* 5, 115-118. **2938**

The general problem of bloat in cattle is discussed. Reference is made to methods of prevention including the spraying of pasture with oil and the feeding of penicillin. Special attention is paid to the conditions found in the rumen when bloat occurs and to the foaming properties of its contents. Maximum foam strength occurs when the rumen contents are at pH 6; protein is likely to be the most important foaming agent.

—E. J. CASTLE.

MOORE, C. L., HALL, V. A. & DRACY, A. E. (1957). **Bloat. Results from various drenchings, including effectiveness of penicillin for prevention.**—*J. Dairy Sci.* 40, 616. **2939**

Of various drenchings used experimentally to produce bloat in sheep only those containing lucerne juice (plain or with atropine or cholesterol) were successful. The incidence of such bloat could be depressed by 77% where a single dose of 25 mg. of penicillin was given on the previous day.—G. P. MARSHALL.

I. & II. LIENERT, E. & KIENEL, G. (1957). Das Problem der Pansentympanie vom Typus schaumige Gärung. I. Schaumbildner und Schaumstabilisatoren (Pathogenese). III. Schaumverhüter (Prophylaxe). [Foamy bloat. I. Foaming agents and foam stabilizers. III. Anti-foaming agents for prophylaxis.]—*Dtsch. tierärztl. Wschr.* 64, 30-32 & 100-102. [For Part II, see *V.B.* 27, 2457.] **2940**

I. The authors tested *in vitro* the foaming properties of some proteins, saponins and mucins mainly of vegetable origin, and the foam stabilizing action of ferric chloride and bentonite.

II. Further *in vitro* tests were made on 28 various anti-foaming agents, including some proprietary silicone preparations. The most effective were silicone emulsion "SE", "Anti-

mussol WL", "Avlinox" and combinations of "SE" with potassium stearate or castor oil.

—R.M.

MARSHALL, S. P., WING, J. M. & ARNOLD, P. T. D. (1957). Effects of feeding aureomycin to dairy calves.—*J. Dairy Sci.* 40, 1242-1249. [Authors' summary modified.] **2941**

Calves fed hay, concentrate, and milk containing aureomycin hydrochloride at the rate of 45 mg. daily per 100 lb. body wt., from birth to 60 days, gained on average 50 lb., as compared with 45.8 lb. for controls. Calves, previously fed aureomycin, that were continued from 61 to 120 days on a ration of lucerne hay plus concentrate containing 50 p.p.m. of aureomycin hydrochloride, gained on average 76.1 lb., as compared with 66.4 lb., for controls. The differences in average wt. gains and feed intakes between the test and control groups were not statistically significant.

After withdrawal of aureomycin from the diet of six calves at 61 days of age, the average wt. gain and hay consumption were significantly lower during the ensuing 30 days than for the six animals previously fed the unsupplemented ration. The effects of its withdrawal at 121 days of age were variable.

After aureomycin was removed from the diet, the responses of individual animals varied widely, ranging from cases in which gain rate, feed intake, and appearance were excellent, to some cases in which there were anorexia, reduced growth, lachrymation, and development of diarrhoea, rough coat, and thickened, scaly skin. Some animals with mild symptoms recovered within a few days to a few weeks, and some severe cases had not recovered after 50 or 90 days.

STEWART, R. J. C. & PLATT, B. S. (1958). Arrested growth lines in the bones of pigs on low-protein diets.—*Proc. Nutr. Soc.* 17, No. 1. pp. v-vi of Proceedings. **2942**

Three young pigs, fed a low (4.5%) protein diet for varying periods up to a maximum of 13 months, failed to grow normally, and white transverse lines of hypercalcified tissue were visible radiographically in the radius. These lines began in the cartilaginous border and passed deeper into the bone as growth proceeded. Histologically they appeared as bands of thickened trabeculae.—E. J. CASTLE.

BETHARD, W. F., WISSLER, R. W., THOMPSON, J. S., SCHROEDER, M. A. & ROBSON, M. J. (1958). The effect of acute protein depriv-

tion upon erythropoiesis in rats.—*Blood* 13, 216-225. [Summary in Interlingua. Authors' summary modified.] **2943**

Haemoglobin concentration, blood volume, and erythrocyte radioiron uptake were measured in rats subjected to acute protein deficiency. Removal of protein from the diet was followed promptly by haemoconcentration, diminution in blood volume, and drastic reduction in erythropoiesis. These changes were reversible, after 35 days, upon addition of protein to the diet. Protein intake is more essential for maintenance of normal erythropoiesis than is total caloric intake. The data suggest that haemoglobin concentration within the vascular system is more important than red cell volume in regulating erythropoietic rate.

FRAZER, S. C. (1958). Laboratory trial of a paper strip test for proteinuria.—*Brit. med. J.* April 26th, 981-983. [Author's conclusions modified.] **2944**

"Albustix" is a simple and rapid test for proteinuria, and, although less sensitive than existing tests, it appears to be adequately sensitive for routine use. Variation of urine pH within physiological limits does not interfere with the results qualitatively, but it slightly affects the quantitative indication. Gross alkaline fermentation of urine can lead to spurious positive indications, while the addition of acid or toluene as preservatives can lead to false-negative reactions. Natural variations of urine concentration and buffering capacity are unlikely to be sources of error. Consistent results are dependent on the impregnated portion of the test-strip being completely immersed and quickly removed from the urine. The strip should not be left in urine for subsequent inspection. False-positive reactions due to non-protein substances have not so far been encountered. Semi-quantitative recording of results is not recommended, apart from a rough classification such as "negative," "trace," or "positive."

ATHENS, J. W., CARTWRIGHT, G. E. & WINTROBE, M. M. (1958). Hematologic manifestations of lysine deficiency in swine.—*Proc. Soc. exp. Biol., N.Y.* 97, 909-912. [Authors' summary modified.] **2945**

Twenty-three piglets were fed a diet deficient in lysine, and after 16 weeks five of them were given hexahomoserine (6-hydroxy-DL-norleucine), a lysine antagonist. All the pigs developed a normocytic, normochromic anaemia, with hypoalbuminaemia and hypocupraemia. No alterations from the normal were noted in the plasma iron concentration or in bone marrow

morphology. The anaemia responded rapidly to administration of lysine. Lysine is therefore essential for normal erythropoiesis in pigs.

DOGGART, J. R., MCCREDIE, J. A. & WELBOURN, R. B. (1958). Urinary excretion of amino-acids in normal dogs and in those with experimentally-induced cirrhosis and with altered blood supply to the liver.—*Vet. Rec.* 70, 279-282. [Authors' summary modified.] **2946**

The excretion of amino-acids in the urine of dogs was studied by paper chromatography. The normal pattern, containing taurine, methylhistidine, and glutamine as the strongest spots, is described, together with its daily variation. The effects of porta-caval anastomosis and total arterilization of the blood supply to the liver in normal and cirrhotic dogs were described; taurine and glutamine were the most affected by these procedures. Excretion was abnormal in oestrus and pregnancy.

O'MOORE, L. B. (1958). The incidence and control of cobalt deficiency under varying soil and pasture conditions in Connemara, Co. Galway.—*Irish vet. J.* 12, 42-51. [Author's summary.] **2947**

Two separate incidences of cobalt deficiency in grazing stock are described, viz., 'galar truaghá' in cattle in the coastal area on a soil of calcareous sand, and 'summer pine' in sheep, especially recently weaned lambs pastured on specific tracts of acid peat in the inland hill area. In addition, cattle on the 'summer pine' peat land are often affected by 'bris bron' shown to be aphosphorosis. The traditional method of avoiding these malnutritional syndromes is systematic transference of stock to different grazing areas. Controlled experiments on supplying cobalt to stock showed that drenching the animals with aqueous cobalt sulphate solution fortnightly is preferable on calcareous sandblown pastures, and top-dressing the pastures with cobalt sulphate is advocated for acid peatland.

OLDFIELD, J. E., ELLIS, W. W. & MUTH, O. H. (1958). White muscle disease (myopathy) in lambs and calves. III. Experimental production in calves from cows fed alfalfa hay.—*J. Amer. vet. med. Ass.* 132, 211-214. [Authors' summary modified.] **2948**

Experimental production of white muscle disease was attempted, using 11 cows and following general management practices and using native feeds implicated in outbreaks of the disorder in Oregon. Fatal white muscle disease occurred in 1 of 10 calves born the second year when the cows were fed 15 to 20 lb. of lucerne hay and 2 to 3 lb. of beans daily. Of 9 calves

born the third year, when the cows were fed solely second-cutting lucerne hay from a farm with a long history of the disease, 4 died with heart lesions of varying severity, and of the 5 slaughtered calves, 2 had heart lesions at about 2 months of age, 1 had extensive skeletal myopathy, and 2 appeared normal. The hay fed during the third year had an unusually high Ca:P ratio.

BLINCOE, C. & DYE, W. B. (1958). Serum transaminase in white muscle disease. — *J. Anim. Sci.* **17**, 224-226. [Authors' summary modified.]

2949

The serum concentration of glutamic-oxalacetic transaminase increased markedly in lambs and calves with white muscle disease (muscular dystrophy), and appeared to be proportional to the extent of the muscle damage. This increase may permit the objective diagnosis of this disease without sacrifice of the animal.

DRAPER, H. H. (1957). Ineffectiveness of selenium in the treatment of nutritional muscular dystrophy in the rabbit. — *Nature, Lond.* **180**, 1419.

2950

Six rabbits were fed a tocopherol-deficient diet. When symptoms of muscular dystrophy were first recognized they were treated with intramuscular sodium selenite daily at two dosage rates, for periods up to 17 days. There was no improvement in the dystrophy or in the level of creatine excretion.—E. J. CASTLE.

REID, B. L., RAHMAN, M. M., CREECH, B. G. & COUCH, J. R. (1958). Selenium and development of exudative diathesis in chicks. — *Proc. Soc. exp. Biol., N.Y.* **97**, 590-593. [Authors' summary modified.]

2951

An account of two experiments with chicks to study the effects of selenium, vitamin E and dried brewers' yeast on occurrence of exudative diathesis, and of these substances on blood changes associated with vitamin E deficiency. Selenium (selenate) at 0.1 p.p.m. was effective in reversing the lowered r.b.c. counts, lowered haemoglobin values, lowered serum protein levels, and the reduced albumin/globulin ratios associated with exudative diathesis. As this level was increased to 1 p.p.m. the total blood changes were not as greatly affected as with feeding of 0.1 p.p.m. level, apparently because of the toxicity of selenium.

GERSHOFF, S. N., LEGG, M. A. & HEGSTED, D. M. (1958). Adaptation to different calcium intakes in dogs. — *J. Nutr.* **64**, 303-312. [Authors' summary.]

2952

Three groups of two dogs each were reared and maintained on diets containing different levels of calcium. Balance studies showed that during the active growth period, those upon the low-calcium diet (0.114%) retained calcium much more efficiently than those fed higher levels.

Repeated balance studies at different levels of calcium intake after the animals were 9 to 36 months of age demonstrated that the amount of calcium needed to maintain balance is largely a reflection of the previous calcium intake. The dogs "adapted" to a low-calcium diet had a calcium requirement for balance so low it could not be measured with accuracy and were not in consistent negative balance upon diets containing 0.034% of calcium.

Chemical and histological examination of the bones failed to reveal differences in composition or abnormalities attributable to calcium deficiency.

GARDNER, D. E. (1957). Hypocalcaemia in the cat. — *N.Z. vet. J.* **5**, 110.

2953

A description is given of a case of hypocalcaemia in a cat three weeks after parturition. A 50% solution of calcium borogluconate was given intravenously (3 ml.) and subcutaneously (2 ml.) and recovery was rapid and permanent.

—E. J. CASTLE.

HEINEMANN, W. W., ENSMINGER, M. E., HAM, W. E. & OLDFIELD, J. E. (1957). Phosphate fertilization of alfalfa and some effects on the animal body. — *Tech. Bull. Wash. agric. Exp. Sta.* No. 24, pp. 23.

2954

Hay made from lucerne grown on a phosphorus deficient soil contained 0.12% phosphorus and 9.7% protein (dry matter basis) and had a Ca:P ratio of 10:1. These values were increased to 0.26 phosphorus and 13% protein (Ca:P ratio of 5.7:1) by the annual application to the land of 66 lb. of available phosphorus per acre.

The two hays, together with small quantities of other substances including adequate vitamin D, were made into rabbit pellets. Breeding does receiving the high phosphorus hay pellets required significantly fewer matings per conception than those receiving the low phosphorus ones, but there was no difference in litter size. Young rabbits fed the low phosphorus hay had retarded growth rates and their mating weights were slightly lower.

The serum total inorganic phosphorus in 10-week-old rabbits was not affected by treatment. The calcium, phosphorus, fat and ash content of the humerus was significantly in-

creased in 10-week-old rabbits fed the low phosphorus diet. The bones of mature does showed similar differences except that the fat % was greatest in those receiving the high phosphorus hay.

The bone breaking strength of rabbits fed the low phosphorus hay was distinctly low; bone abnormalities seen in X-ray photographs of these animals are described and six illustrations are included.—E. J. CASTLE.

MATRONE, G., CONLEY, C., WISE, G. H. & WAUGH, R. K. (1957). A study of iron and copper requirements of dairy calves. — *J. Dairy Sci.* **40**, 1487-1447. **2955**

From experiments on 27 milk-fed calves it was concluded that the minimum amount of iron required to maintain normal blood haemoglobin was 30 mg. a day. The calves were muzzled between feeds to prevent access to other sources of minerals. Serum copper decreased gradually during 10 months of milk diet. Oral administration of 6 mg. Cu a day prevented this decrease.

—R.M.

WALLACE, H. D. & COMBS, G. E. (1957). High level copper feeding for growing-fattening swine. — *Ann. Rep. agric. Exp. Sta., Univ. Fla.* 1956 p. 69. **2956**

Copper supplements of 100, 150 or 200 p.p.m. increased weight gains and did not cause mortality while 250 p.p.m. caused the death of two animals and a marked reduction of weight gains and feed conversions.—T.E.G.R.

CRAIG, J. M. & SCHWARTZ, R. (1957). Histochemical study of the kidney of rats fed diets deficient in potassium. — *Arch. Path.* **64**, 245-254. **2957**

The kidneys of rats fed diets deficient in potassium, sodium, and both elements were examined by histochemical methods. Animals fed the diets deficient in both elements ate poorly, and growth soon ceased. The kidneys of potassium deficient animals had histological changes in all zones of the renal tubule, the changes being most conspicuous in the medulla and terminal collecting tubules. The changes in the kidney are potentiated by diets deficient in both sodium and potassium. The toxic effects of sodium bicarbonate in potassium deficiency are demonstrable in the heart lesions, but not in the kidney.—D. S. PAPWORTH.

KULWICH, R., STRUGLIA, L. & PEARSON, P. B. (1958). Metabolic fate of S^{35} -labeled sulfate in baby pigs. — *Proc. Soc. exp. Biol., N.Y.* **97**, 408-410. [Authors' summary modified.] **2958**

When S^{35} was administered by stomach

tube as sulphate to piglets about 62% of the dose was excreted in urine within 4 days. Of tissues analysed, ear cartilage, red bone marrow and aorta showed the highest concentrations of S^{35} , and brain and muscle the lowest concentrations, 4 days after dosing. About half of the S^{35} in the contents of the intestinal tract was in organic form, while only very small amounts of organic- S^{35} were detected in the tissues.

DIVEN, R. H. & ERWIN, E. S. (1958). Utilization of vit. A and carotene by normal and deficient sheep. — *Proc. Soc. exp. Biol., N.Y.* **97**, 601-603. [Authors' summary modified.] **2959**

The maximum absorption of vitamin A alcohol occurred at 12 hours after treatment, while beta carotene was absorbed at a slower more sustained rate. On the other hand, vitamin A alcohol and acetate were absorbed at comparable rates. The comparative value of vitamin A alcohol and beta carotene as measured by hepatic storage was strikingly different for normal and vitamin A deficient sheep indicating that deficiency may impair carotene utilization.

JONES, J. D. & BAUMANN, C. A. (1958). Effect of dietary antibiotics on plasma vitamin A. — *Fed. Proc.* **17**, 251. [Authors' abst.] **2960**

The plasma of rats fed vitamin A acetate contained substantially less esterified vitamin A when penicillin, aureomycin, or albamycin were present in the basal diet than when the diet was free of antibiotics. Blood levels of vitamin A alcohol were unchanged, and the level of free and esterified vitamin A in the liver and kidney were also unaffected or increased very slightly (penicillin). When vitamin A alcohol was fed to depleted rats, the distribution of alcohol and ester in the plasma was unaffected by dietary antibiotics. However, when rats with substantial stores of vitamin A were placed on low A diets, relative decreases in esterified vitamin A were again apparent in the blood of rats fed antibiotics. Since the reserves of vitamin A in the liver and kidney exist largely in the ester form, the results suggest that dietary antibiotics either interfere with the entry of esterified vitamin A into the blood, or hasten its removal.

- I. HEATON, F. W., LOWE, J. S. & MORTON, R. A. (1957). Aspects of vitamin A deficiency in the rat. — *Biochem. J.* **67**, 208-215. **2961**
- II. LOWE, J. S., MORTON, R. A., CUNNINGHAM, N. F. & VERNON, J. (1957). Vitamin A deficiency in the domestic fowl. — *Ibid.* 215-223. **2962**
- III. GREEN, B., LOWE, J. S. & MORTON, R. A.

(1957). Vitamin A deficiency in the rat, with and without added dietary cholesterol.—*Ibid.* 223-228.

2963

I. The unsaponifiable material from various organs of vitamin-A deficient, control, and stock colony rats was examined by chromatographic and spectroscopic techniques. Vitamin-A deficiency caused an increase in "SA", an unidentified product recognized spectroscopically, in the liver and submaxillary lymph node. The liver also showed a marked concentration of "SC" (another unidentified product), and there was a much smaller conc. of this material in the small intestine. The urinary bladder, submaxillary lymph node and vagina contained increased amounts of 7-dehydrosteroid, and the submaxillary lymph nodes, vagina and testis contained an accumulation of spectroscopically transparent sterol.

II. Chicks fed a vitamin-A deficient diet became unsteady on their legs in the fourth week and soon died. The kidneys were pale and contained urates, but there was no loss of appetite or weight, and no xerophthalmia or lesions in trachea or oesophagus. Older fowls fed a similar diet at 16 weeks of age developed deficiency symptoms after 7 weeks. The males became unconscious for periods and the females stood only with difficulty. Sexual development was much retarded in both sexes. There were no significant differences in "SA" and "SC" in the unsaponifiable fraction of various tissues from either young or older birds, nor was there a difference in 7-dehydrocholesterol and cholesta-3:5-dien-7-one in older birds. Gizzard muscle contained cholesta-3:5-dien-7-one.

III. "SA", "SC" (substances recognizable by their absorption spectra), cholesta-3:5-dien-7-one, and 7-dehydrocholesterol were present in the unsaponifiable fraction of livers of rats given cholesterol. The effects of vitamin A depletion and cholesterol feeding seemed to be additive and mainly independent. There were no important differences in ultra-violet spectra shown by the unsaponifiable fractions from kidney or intestine.—D. S. PAPWORTH.

GARBE, K. (1957). Die Veränderungen des Nukleinsäurestoffwechsels der Vitamin A-frei ernährten Ratte unter besonderer Berücksichtigung der analytischen Methoden. [Changes in nucleic acid metabolism in rats deficient in vitamin A.]—*Inaug. Diss., Munich* pp. 100.

2964

Vitamin A deficiency was associated with decrease in nucleic acids in cells, particularly of

deoxyribonucleic acid in the digestive tract, brain and sex organs. Nucleic acids increased in the reticulo-endothelial system.—R.M.

BAKER, H., ZIFFER, H., PASHER, I. & SOBOTKA, H. (1958). A comparison of maternal and foetal folic acid and vitamin B₁₂ at parturition.—*Brit. med. J.* April 26th, 978-979. 2965

In all except two of 22 paired serum samples from mothers and infants at parturition which were assayed for vitamin B₁₂ and folic acid, the level of both vitamins was lower in the mother than in the infant. The authors discussed the role of folic acid and vitamin B₁₂ in pregnancy.—F.E.W.

SMITH, E. L. (1958). Biochemical functioning of vitamin B₁₂.—*Nature, Lond.* 181, 305-306. 2966

S. reviewed the chemical structure of vitamin B₁₂ and the biochemical behaviour of some analogues, and suggested that, since most vitamin B₁₂ in animal or bacterial cells appears in the bound form, one should consider the protein complex rather than the free vitamin as the biologically functional unit. He examined several hypotheses of the ways which vitamin B₁₂ functions.—D. S. PAPWORTH.

MEITES, J., FENG, Y. S. L. & WILWERTH, A. M. (1957). The effects of endocrine imbalances on vitamin requirements.—*Nutr. Symp. Ser. No. 15.* pp. 13-24. [New York: National Vitamin Foundation Inc.] [Authors' conclusions modified.]

2967

When large doses of cortisone are injected into young rats deficient in vitamin B₁₂ there is a pronounced increase in gluconeogenesis from protein, hyperglycaemia and an increase in insulin secretion. Cortisone and the vitamin B₁₂ deficiency interfere with normal insulin action, increasing the hyperglycaemia and glucosuria, and leaving little carbohydrate available for anabolic purposes. These lead to inhibition of body and hair growth and losses in weight of lymphoid tissues. When large doses of cortisone are given to young rats with an abundant intake of vitamin B₁₂, there is an increase in food consumption and availability of carbohydrate. These stimulate insulin secretion and thereby promote carbohydrate utilization for energy and storage, with a resultant reduction in protein catabolism by cortisone, leaving more protein as well as carbohydrate available for body building. Presumably some, but not all, of the interactions between large doses of cortisone and thiamine or pyridoxine would be similar.

KÖHLER, H., MANOCCHIO, I. & WOJNKE, L. (1957). Klinische und pathologisch-histologische Untersuchungen bei Diabetes mellitus des Hundes. [Clinical and pathological study of diabetes mellitus in two dogs.]—*Arch. exp. VetMed.* 11, 331-341. **2968**

A fairly detailed account.—R.M.

ENGEL, F. L. (1957). The influence of the endocrine glands on fatty acid and ketone body metabolism.—*Nutr. Symp. Ser.* No. 15. pp. 49-62. [New York: National Vitamin Foundation Inc.] [Author's summary modified.] **2969**

Neither the adrenal medulla, the adrenal

See also abst. 3071 (report, Jamaica).

DISEASES, GENERAL

MAHAFFEY, L. W. & ROSSDALE, P. D. (1957). Convulsive and allied syndromes in new-born foals.—*Vet. Rec.* 69, No. 49. Pt. 2. pp: 1277-1286. Discussion: pp. 1286-1289. **2970**

The authors described a convulsive syndrome of new-born, Thoroughbred foals which apparently occurs only in the United Kingdom, and which was first described by E. B. Reynolds [*Vet. Rec.* 10, 277 (1930)]. Affected foals were colloquially described as "barkers, dummies or wanderers" and the condition commenced a few hours after birth: about half of affected foals died from convulsions. There was severe pulmonary atelectasis. The condition may be associated with premature cutting of the umbilical cord. A comparison was made with a similar condition in human infants.

—R.M.

BROOIJMANS, A. W. M. (1957). Electrocardiography in horses and cattle. Theoretical and clinical aspects.—*Thesis, Utrecht* pp. 265. [In English.] **2971**

A detailed account of normal and abnormal electrocardiograms in horses and cattle, combining a review of the literature and the author's own observations.—R.M.

CARTER, G. R. & ROWSELL, H. C. (1958). Studies on pneumonia of cattle. II. An enzootic pneumonia of calves in Canada.—*J. Amer. vet. med. Ass.* 132, 187-190. [Authors' summary modified.] **2972**

Pneumonia lesions were found in 31 of 124 normal slaughter calves. The histopathological changes were similar to those seen in the "cuffing" pneumonia described in Great Britain [see *V.B.* 23, 2866]. *Pasteurella septica* was recovered from 12 of the 31 affected pairs of lungs.

cortex nor the hypophysis is essential to the development of ketosis during fasting or hypoglycaemia. Glucocorticoids suppress the ketosis resulting and fasting, cold-stress and fluoracetate poisoning but not that due to insulin hypoglycaemia or ketogenic pituitary extracts.

Growth hormone, thyrotrophin and corticotrophin possess ketogenic and adipokinetic action, the latter independent of the adrenal cortices. The significance of multiple ketogenic factors and their possible modes of action are considered. The hypophysectomized rat develops greater ketosis and more hypoglycaemia than does the normal rat during a seven-day fast.

OTTOSEN, H. E. (1957). Pneumonitis in cattle.—*Nord. VetMed.* 9, 569-589. [In English. Summaries in German and Danish.] **2973**

Between April 1954 and August 1956 pneumonitis was diagnosed in 92 cattle by the State Veterinary Serum Laboratory in Copenhagen. The author described pathological and histological features of this condition. It was apparently transmissible, but the causal agent was not identified. Apart from lung lesions, enteritis was also present in 26 cases.—R.M.

I. GEORGIEFF, R. (1957). Klinische und chemische Untersuchungen über die chronische vesikale Hämaturie der Rinder. [Clinical and chemical research on bovine chronic haematuria.] — *Wien. tierärztl. Mschr.* 44, 78-88. [Summaries in English, French and Italian.] **2974**

II. GEORGIEFF, R. (1957). Untersuchungen über die Beziehungen der Saponine zur chronischen vesikalen Hämaturie der Rinder. [Relationship between saponins and bovine chronic haematuria.] — *Ibid.* 200-207. [Summaries in English, French and Italian.] **2975**

I. & II. G. reported the results of studies of this disease made at a special lab. set up in 1949 in the Rhodope mountains of Bulgaria. No decrease in blood calcium was found. The amount of silica in urine from affected cows ranged from 63 to 197 mg.%, compared with 30 to 103 mg.% in healthy cows. Microhaematuria was detected in 40% of apparently healthy cows in affected districts. This form of the disease became clinical haematuria if hay from an affected district was fed together with horse-chestnut saponins. Healthy cows had to be fed with hay from affected districts for a long time before haematuria developed. The

therapeutic action of calcium preparations was probably due to thickening of the bowel wall which hindered the absorption of saponins. Saponins were regarded only as capable of provoking latent disease; they could be neutralized in foodstuffs by phytosterins. G. concluded that chronic haematuria was a chronic toxicosis and not a deficiency disease. Search was being made for the toxic factor.—R.M.

HOWARTH, J. A., MOULTON, J. E. & WHEAT, J. D. (1958). Studies on experimental epizootic bovine abortion.—*J. Amer. vet. med. Ass.* 132, 19-21. **2976**

In experiments on epizootic abortion of unknown aetiology [see *V.B.* 26, 3245] spleen and liver tissue suspensions from aborted foetuses were injected into the thoracic cavities of foetuses *in utero*. Abortion occurred in 4 of 9 experimental cows. Abortion also occurred in two cases in which a sterile suspension (treated with antibiotics) was used. In all aborted foetuses the lesions were similar to, but less extensive than, those observed in field cases, but the characteristic liver changes were absent.

—T.E.G.R.

MARTINI, I. (1957). Sindromi nervose nei giovani bovini. [Nervous syndromes in calves.]—*Vet. ital.* 8, 1234-1240. **2977**

A brief description of diseases of calves characterized by nervous symptoms.—T.E.G.R.

WILKENS, H. & ROSENBERGER, G. (1957). Betrachtungen zur Topographie und Funktion des Oesophagus hinsichtlich der Schlundverstopfung des Rindes. [Topography and function of the oesophagus, with regard to oesophageal obstruction, in cattle.]—*Dtsch. tierärztl. Wschr.* 64, 393-396. **2978**

From a topographical study the authors drew conclusions which are of practical importance in the treatment of oesophageal obstruction in cattle. With a cow in normal posture there were 3 curves in the oesophagus. Only the most anterior of these was eliminated by holding the head in the usual position for insertion of a probang; 2 were eliminated when the head was held low. Sphincters at either end of the oesophagus functioned independently (2 coloured plates.)—R.M.

DAVIS, G. K. & KIRK, W. G. (1957). Stringhalt in cattle.—*Ann. Rep. agric. Exp. Sta., Univ. Fla.*, 1956 p. 69. **2979**

A study of the composition and morphology of the femur bones from cattle with stringhalt (upward luxation of the patella) revealed no

significant change in composition. It is considered that the change in shape may be due to heredity as much as to stress.—T.E.G.R.

LÉVÈQUE, H. (1957). Contribution à l'étude d'une maladie appelée "kraff" chez les chameaux du Sud tunisien. [“Kraff”, a disease of camels in southern Tunisia.]—*Rev. Cps vét. Armée* 12, 115-120. **2980**

The disease was characterized by pica and progressive lameness, leading to cachexia and inability to stand. No pathological examinations were made. L. suggested that the condition was osteomalacia.—R.M.

FIELD, H. I. (1957). Diseases of pigs.—*Bull. Minist. Agric., Lond.* No. 171. pp. 46. **2981**

A concise account of the principal diseases of pigs, written for the farmer. A few minor inaccuracies may be noted: for example, the name Glässer (or Glaesser) is mis-spelt Glasser on p. 17. The statement that Teschen disease has not yet been reported in Great Britain will require modification now that the virus of “Talfan” disease has been shown to be serologically the same as that of Teschen disease [*V.B.* 25, 2159].—R.M.

DONE, J. T. (1957). The pathological differentiation of diseases of the central nervous system of the pig.—*Vet. Rec.* 69, No. 49. Pt. 2. pp. 1341-1349. Discussion: pp. 1349-1353. **2982**

D. presented an annotated list of diseases of the c.n.s. of pigs, classifying them into inflammatory lesions, degenerative lesions, mechanical effects, vascular diseases, neoplasia, developmental abnormalities, and diseases in which no lesions had been found. He dealt with degenerative lesions at some length, particularly polioencephalomalacia. The relationship of Talfan disease and poliomylitis suum to Teschen disease was discussed.—R.M.

LUDVIGSEN, J. B. (1957). Akuter Herztod und Skelettmuskelentartung des Schweines. [Acute fatal syncope and dystrophy of skeletal muscle in pigs.] — *Arch. exp. VetMed.* 11, 198-224. **2983**

L. regarded acute fatal syncope and muscular dystrophy as different manifestations of the same disease. Muscular dystrophy was present in all pigs dying of heart failure in Denmark. He concluded that the disease was due to endocrine disturbances, particularly thyroid insufficiency and insufficiency of the pituitary-adrenal system. It was possible that these insufficiencies resulted from increased growth hor-

mone activity, due to selective breeding for rapid growth. But fatal syncope and muscular dystrophy were probably nutritional as well as genetic problems.—R.M.

GRIEM, W. (1957). Ein Beitrag zu den Schilddrüsenveränderungen beim Herzschlag der Schweine. [Thyroid lesions in fatal syncope in pigs.] — *Berl. Münch. tierärztl. Wschr.* **70**, 362-365. [English summary.] **2984**

In addition to the thyroid lesions described by other authors [*V.B.* **15**, 762; **17**, 2038; **18**, 125] G. found vascular congestion. Similar lesions could be reproduced by inducing passive hyperaemia through partial ligation of the thyroid or jugular veins. There was no evidence of increased content of thyrotropic hormone in the pituitary glands of pigs dying from fatal syncope.—R.M.

TAYLOR, D. C. (1958). The pathological effects of thorotrust myelography in the dog. — *J. comp. Path.* **68**, 213-218. [Author's conclusions modified.] **2985**

Thorotrust (a stabilized 25% soln. of thorium dioxide), which is now infrequently used in human radiology, is still used as a contrast medium in canine myelography.

The histopathological findings in the meninges of 12 dogs on which myelography had been performed for diagnostic purposes are described. The salient pathological features of the meningeal response to subarachnoid injection of thorotrust are phagocytosis and a rapidly fibrosing leptomeningitis. The significance of these findings is discussed.

GASTAUT, H., BERARD-BADIER, M., DARRASPE, E. & VAN BOGAERT, L. (1957). Etude anatomo-clinique de dix-neuf chiens épileptiques. [Clinical and anatomical study of 19 epileptic dogs.] — *Rev. Méd. vét.* **108**, 593-612. **2986**

The authors' material comprised 11 dogs with apparently primary epileptiform attacks and 8 with secondary epileptiform attacks (mostly following distemper). Encephalitis appeared to be the major factor in the aetiology of these disorders. Lymphocytic leptomeningitis was found in 3 dogs. The frequent occurrence of lesions in the piriform lobe of the cerebrum was regarded as being analogous to the lesions in human epilepsy.—R.M.

SCHULZE, W., CHRISTOPH, H. J. & NOWAK, R. (1957). Beitrag zur physiologischen Schwankungsbreite des Elektrokardiogramms beim Hunde. [Physiological variations in the electrocardiogram of dogs.] — *Arch. exp. VetMed.* **11**, 994-1014. **2987**

Over a thousand dogs of various breeds were examined. 16 different types of electrocardiogram were described.—R.M.

HIERONYMI, G. (1957). Über spontane Vorkommen entzündlicher Bronchiectasen bei Albinoratten. [Spontaneous occurrence of inflammatory bronchiectasis in albino rats.] — *Arch. exp. VetMed.* **11**, 225-234. **2988**

Inflammatory bronchiectasis was observed in one or several lobes of lungs from 47 of 109 apparently healthy albino rats, aged about 2 years. In 2 rats small fragments of bone were seen in sections of alveoli (6 photomicrographs). —R.M.

ALLEN, T. E. & SKALLER, F. (1958). Mortality in an uncultured population of four generations of chickens during their first laying year. — *Aust. vet. J.* **34**, 61-70. [Authors' summary modified.] **2989**

In a population of 11,047 pullets housed in single laying cages at the C.S.I.R.O. Poultry Research Centre, Werribee, Victoria, during the period 1952-55, inclusive, all pullets which died between the time of housing at sexual maturity and the age of 72 weeks (2,371 birds or 21·4%) were examined P.M. The cause of death was determined mainly from gross pathology and the results tabulated according to different classifications. Neoplasms were responsible for the greatest number of deaths and accounted for 34·5% of the total mortality. Within this group, 53·8% of deaths were due to visceral lymphomatosis and 25% to neural lymphomatosis.

An analysis of differential death rates between the different breeds and breeding flocks maintained at the Centre was undertaken and is discussed in detail.

BRIDGES, C. H. & FLOWERS, A. I. (1958). Iridocyclitis and cataracts associated with an encephalomyelitis in chickens. — *J. Amer. vet. med. Ass.* **132**, 79-84. **2990**

A description of a disease seen in 18 flocks of chickens obtained from 5 different hatcheries. Six breeds or crosses were involved and the age incidence ranged from 3 to 6 months, most of the cases occurring between 6 and 10 weeks. Morbidity was from 1 to 35%, with an average of approximately 5%. Mortality was low and apparently due to starvation. Transmission experiments were inconclusive and the cause remains unknown.

The disease sometimes followed the occurrence of what was described as "epidemic tremor" by the owners and by poultry diagnostic laboratories. Two photomicrographs suggest the accuracy of this diagnosis; but the authors are

careful to avoid suggesting an aetiological relationship between the ocular and the nervous diseases.—L. M. MARKSON.

GEORGE, L. A., JR. & BUSTAD, L. K. (1958). Comparative effects of beta irradiation on rabbit, sheep and swine skin.—*Fed. Proc.* 17, 53. [Authors' abst. modified.] 2991

The skin of young adult rabbits, sheep and pigs was exposed to a Sr⁹⁰ plaque having a surface dose rate of 8,700 rad/hr. The exposures were 2,000, 8,000 and 16,000 rad. Differences were observed in the reaction of the skin of the 3 species when exposed to the same dose level of beta irradiation and were greatest at the 2 highest exposures. Rabbit skin was more sensitive than sheep or pig skin, as judged by the nature of skin damage, duration of radiation lesion, and completeness of epithelial repair. Complete epithelial repair occurred in sheep and pigs following all the exposures studied, while incomplete epithelial repair was evidenced in skin of rabbits following exposure to 8,000 rad or more. At 8,000 rad hair follicles in pigs showed much more sensitivity to beta irradiation than did the follicles of sheep or rabbit. There was no re-growth of hair in pigs but pigmentation was observed in exposed areas of sheep skin though not in the pig or rabbit skin.

BRECHER, G., CRONKITE, E. P., CONARD, R. A. & SMITH, W. W. (1958). Gastric lesions in experimental animals following single exposures to ionizing radiations.—*Amer. J. Path.* 34, 105-119. [Authors' summary modified.] 2992

In dogs, rats and hamsters, epithelial changes in the gastric mucosa developed about 2 weeks after a supralethal dose of radiation. The changes resembled those which occurred earlier in the small intestine. Regeneration proceeded from the neck of glands and was comparable to the regeneration of the mucosa of the small intestine from surviving crypt epithelium. Occasionally, the direct damage was severe enough to lead to ulceration, even after only local irradiation and in the absence of agranulocytosis and haemorrhage. This was in contrast to the late ulcers appearing in the regenerated mucosa of the small intestine which were associated with haemorrhage or represented direct sequelae of the pancytopenia that follows lethal irradiation.

See also abst. 2742 (E. coli associated with oedema disease in pigs).

POISONS AND POISONING

SUTTIE, J. W., MILLER, R. F. & PHILLIPS, P. H. (1957). Effects of dietary NaF on dairy cows. II. Effects on milk production.

TYLER, F. H. (1957). The effect of liver disease on adrenal cortical function.—*Nutr. Symp. Ser.* No. 15, pp. 9-12. [New York: National Vitamin Foundation Inc.] [Author's summary modified.] 2993

Study of patients with cirrhosis of the liver has demonstrated that the plasma levels of 17-hydroxycorticosteroid are normal. However, there is a reduced rate of removal of cortisol from the plasma and therefore less secretion is required to maintain these normal levels.

After surgical operations the 17-hydroxycorticosteroid levels rose strikingly. It appears that this change was mediated in part by hepatic dysfunction and in part by stimulation of the adrenal to secrete 17-hydroxycorticosteroids at sub-maximal rates.

In the evaluation of adrenal cortical function, it is important that the status of hepatic function be considered.

SCHAPIRA, G. & DREYFUS, J.-C. (1957). Lacticodehydrase plasmatique au cours des myopathies. [Lacticodehydrase content of the blood in myopathies.] —*C. R. Soc. Biol., Paris* 151, 22-23. 2994

There was an increase in the enzyme in plasma from human beings with muscular dystrophy. Its concentration was normal in persons with muscular atrophy of nervous origin.—R.M.

ELLIOTT, G. A. (1958). Focal necrosis in the cerebral cortex of the bovine: a histopathologic study.—*Vet. Ext. Quart. Univ. Pa.* No. 150, pp. 75-92. [Author's summary modified.] 2995

E. described the histopathology of four cases. The lesions consisted of a focal necrosis in the cerebral cortex underlying foci of meningeal reaction with death of neurones; severe vacuolation of the outer layers of the cortex; accumulations of phagocytes; and endothelial proliferation. The findings were comparable with those in cases reported by Jensen *et al.* as polioencephalomalacia of cattle and sheep. It was not possible to establish the aetiology. The nature and location of the lesions suggested vascular involvement, possibly the result of some toxic product elaborated during metabolic processes, following ingestion, or by an infectious agent.

—*J. Dairy Sci.* 40, 1485-1491. [Authors' summary modified.] 2996

The tolerance of lactating cows to added

dietary increments of a soluble fluoride (NaF) over a $5\frac{1}{2}$ -year period was studied. The results indicated that under adequate nutritional and husbandry conditions, levels of 50 p.p.m. of fluorine fed as NaF produced no direct deleterious effect upon milk secretion. Sustained fluorine ingestion, with average intake levels of 1·5, and peak intakes of 1·7 or more, mg. of F/kg. body wt., reduced milk and butterfat production in certain cows, as the result of anorexia and there was excessive weight loss, and stiffness in the legs. These results indicate further that the effect of fluorine fed in this form on milk production was secondary and conditioned by a curtailed feed intake. The cows tolerated 30 p.p.m. fluorine in their ration, whereas 40 p.p.m. was apparently near the marginal zone of tolerance, and with 50 p.p.m. in the ration fluorine toxicosis developed. The addition of calcium reduced the toxicity of the added NaF .

A latent period of from 2 to 5 years elapsed between the time the effects on the incisor teeth were first noticed and the development of other physiological effects, including the inhibition of milk production. Thus, these studies contribute further evidence that the development of fluorine toxicosis is a function of the duration of exposure, as well as of level of ingestion. Prolonged dry periods allowed sufficient recovery from debilitating fluorosis for subsequent normal lactation and milk production.

CUNNINGHAM, I. J. (1957). Molybdenum poisoning in cattle on pumice land and its control by injection of copper.—*N. Z. J. Agric.* 95, 218-222.
2997

A map shows the distribution in the North Island of New Zealand of soils which give rise to pasture with high molybdenum content. The best method of controlling Mo poisoning in cattle was found to be s/c inj. of a suspension of copper glycinate in oil: injections each of 400 mg. were given to calves at 2-3 months of age, at weaning time, and 3 months after weaning. The dose of copper glycinate for sheep was 150 mg.
—R.M.

BRACEWELL, C. D. (1958). A note on jaundice in housed sheep.—*Vet. Rec.* 70, 342-344.
[Author's summary modified.]
2998

Twenty-four of 720 permanently housed ewes died after a brief illness characterized by jaundice; 10 were Romney Marsh, 5 Border Leicester, and 4 Clun Forest. All sheep had received a mineral supplement containing 1,430 p.p.m. (dry matter) of copper. P.M. findings included an enlarged and yellow liver, and enlarged and dark purple kidneys. Swelling and degeneration of liver cells, presence of certain

characteristic "pigmented reticulum cells" in the liver, and degeneration of the convoluted tubules of the kidneys, were the main histological lesions. Liver copper values were abnormally high. There are many similarities between this disease and descriptions of "chronic copper poisoning." It is suggested that other factors apart from intake of copper were involved in the appearance of the fatal syndrome.

BEHRENS, H. (1957). Über einen Fall von Eisenvergiftung bei Saugferkeln. [Iron poisoning in unweaned piglets.] — *Mh. VetMed.* 12, 422-423.
2999

Fatal poisoning occurred in 5 piglets each given a prophylactic inoculation at the age of 1 or 2 weeks of 100 mg. Fe in the form of 2 ml. of an iron-dextran preparation; there were 5 untreated litter-mates which served as controls. Muscles of affected piglets were watery and there was haemosiderosis in the liver. There was no evidence of anaemia in the litter.—R.M.

VON BACKSTRÖM, U. (1957). Some unusual cases. Atypical lead poisoning—bull. Specific therapy with calcium disodium versenate.—
J. S. Afr. vet. med. Ass. 28, 213-215.
3000

A bull stopped eating and developed lachrymation, salivation, severe colic, bronchitis, paralysis of the bladder and weakness of the hindquarters. Rapid recovery followed single i/v inj. of a soln. containing 24 g. calcium disodium edetate. Lead was identified in the faeces. It was believed to have been ingested from a pool of rainwater in the exercise pen which had drained off painted roofs.—R.M.

PILZ, W., SCHMITZ-HILLEBRECHT, E. & WETZEL, R. (1957). Toxizitätsprüfung mit dem Holzschutzmittel "Basilit UA" an Kindern. [Toxicity tests in cattle of a wood preservative containing sodium arsenate, fluorate and bichromate.] — *Vet.-med. Nachr.* No. 2, pp. 78-80. [English summary p. 3 of Suppl.; French summary p. 11 of Suppl. Spanish summary p. 19 of Suppl.]
3001

The preservative "Basilit UA" contained 26% sodium fluoride, 42% sodium bichromate and 32% sodium arsenate. It was shown that timber impregnated with it could be licked by cattle without harmful effects being produced.
—R.M.

SCHULZE, W. & SCHÜTZLER, H. (1957). Knochenmarkuntersuchungen bei Schweinen nach Verfütterung von Chlornaphthalin und Chlornaphthalin zusammen mit Tetrachlor-kohlenstoff. [Studies on bone marrow of pigs after oral administration of chlorinated

naphthalene alone or with carbon tetrachloride.] — *Arch. exp. VetMed.* 11, 935-946. 3002

Four piglets were given 20 mg./kg. body wt. chlorinated naphthalene daily and 2 were given 5 or 9 mg./kg. chlorinated naphthalene plus 0.5 mg./kg. CCl_4 daily. After 2 months 2 pigs of the first group and 1 of the second group died: The survivors were killed after 2½ months. Bone marrow samples were collected from the sternum at intervals of 8 or 10 days during the experiment. The findings were compared with the peripheral blood and with samples from 3 healthy piglets. The difficulties of differentiating cells in bone marrow smears, and of comparing the results with those of other authors, were discussed.—R.M.

RIGDON, R. H., CRASS, G., FERGUSON, T. M. & COUCH, J. R. (1958). Effects of gossypol in young chickens with the production of a ceroid-like pigment.—*Arch. Path.* 65, 228-235. [Authors' summary modified.] 3003

Chicks fed gossypol developed a haemolytic type of anaemia and had a ceroid-like pigment

See also absts. 2790 (toxic encephalomalacia in equines from mouldy maize); 2904 (toxicity of meal mites for farm animals); 3069 (report, New Zealand).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

SEVAST'YANOVA, N. A. (1957). [Role of protective inhibition in chemotherapy.]—*Trud. vsesoyuz. Inst. eksp. Vet.* 20, 329-332. [In Russian.] 3006

"Protective inhibition" of the c.n.s. was achieved by administering morphine hydrochloride, hexenal or chloral hydrate. Mice inoculated s/c with 5 mg./kg. body wt. antrycide (quinapyramine) died after 15-20 min; they did not die if morphine (0.5 mg./kg.) was inj. s/c at the same time or shortly after administration of antrycide. Choral hydrate inj. s/c at 0.5 g. per kg. caused anaesthesia lasting 8-10 hours in mice: 76% of anaesthetized mice were protected from lethal doses of antrycide. Similar results were obtained from similar experiments on rabbits. Two foals were given simultaneously a subtoxic dose of antrycide (1.5 mg./kg.) and 5 ml. of 1% soln. morphine hydrochloride. They became sleepy, pulse and respiration increased, and there was moderate sweating but no colic. Another foal, given the same dose of antrycide alone, developed rapid pulse and respiration, increased body temp., muscular tremor, and acute colic lasting for 3 hours.—R.M.

in the duodenal villi and in the sinusoids of the liver and spleen. No significant lesions were observed in the viscera of these birds. It would appear that the pigment resulted from the action of gossypol on the r.b.c.

BERRY, D. M. & BRAS, G. (1957). Venous occlusion of the liver in *Crotalaria* and *Senecio* poisoning.—*N. Amer. Vet.* 38, 323-326 & 3004

Hepatic venous occlusion in *Crotalaria* poisoning of cattle in Jamaica was described. This lesion appeared to be specific for poisoning by hepatotoxic alkaloids and could be used for diagnosis based on liver biopsy.—R.M.

HILL, K. R., STEPHENSON, C. F. & FILSHIE, I. (1958). Hepatic veno-occlusive disease produced experimentally in rats by the injection of monocrotaline.—*Lancet* March 22nd, 623. 3005

A preliminary note. Within ten days of administering monocrotaline to rats by the intraperitoneal route, hepatic veno-occlusive disease developed in about a quarter of the animals.

—L.M. MARKSON.

MUGGENTHALER, K. (1957). Zur Pharmakologie des acetylglutaminsauren Calciums. [Pharmacology of calcium acetylglutamate.]—*Inaug. Diss., Munich* pp. 32. 3007

This preparation provided ready availability of calcium ions and was only slightly irritant to body tissues. It was suitable for use in calcium therapy and possessed advantages over calcium chloride and calcium gluconate.—R.M.

VIANELLO, G. (1958). Gli incidenti nella applicazione dei sali di calcio per via parenterale ai bovini. [Effects of parenteral application of calcium salts in cattle.]—*Clin. vet., Milano* 81, 9-14. 3008

A discussion of accidents which are likely to occur after parenteral administration of calcium salts. These include local necrosis, periphlebitis, systolic cardiac block and death. Examination of the heart before treatment is recommended.—T.E.G.R.

HERTER, R. (1958). Pathologia medicamentosa oder das therapeutische Risiko. Spezieller Teil. [Possible harmful side-effects of thera-

peutic substances.]—*Tierärztl. Umsch.* 13, 35-44. **3009**

A review of 205 published references to the incidence, in veterinary practice, of harmful side-effects due to:—sera and vaccines, sedatives, stimulants, analgesics, antipyretics, inhalational, local and spinal anaesthetics, muscle relaxants, autonomic drugs, antihistamines, metals, metalloids, sulphonamides, sulphones, antibiotics, ectoparasiticides, anthelmintics, hormones, thyrostatic feed supplements, and a miscellaneous group of other, including homoeopathic, drugs.—G. P. MARSHALL.

EASTERBROOKS, H. L. (1958). Parenteral enzyme therapy with streptokinase-human plasminogen-streptodornase.—*Vet. Med.* 53, 143-147. [Author's summary modified.] **3010**

The concept of parenteral therapy with the streptokinase-human plasminogen-streptodornase enzyme complex is reviewed. It is suggested that its action is largely dependent upon its ability to stimulate the plasminogen to plasmin reaction in the blood of patients. Experiments and clinical data appear to support the suggestion that when combined with antibiotics, the enzyme complex can be highly useful in the management of certain inflammatory diseases in veterinary practice.

PAREZ, M. & GUILLO, B. (1958). Action des antibiotiques sur les spermatozoïdes de taureau, *Vibrio foetus* et *Trichomonas foetus*. [Action of antibiotics on bull spermatozoa, *Vibrio fetus* and *Trichomonas foetus*.]—*Rec. Méd. vét.* 134, 157-161. [English summary modified.] **3011**

Of several antibiotics tested for their destructive activity on bull spermatozoa penicillin G and dihydrostreptomycin proved to be harmless if used at a concentration less than 500 i.u. or 500 µg. per ml.

Erythromycin and a combination of penicillin G with dihydrostreptomycin were the most active against *V. fetus*.

The tetracycline group seemed to be the only antibiotics active against *Tr. foetus*.

GRIFFITH, R. S. & PECK, F. B., JR. (1958). Comparison of oral penicillin V with injectable procaine penicillin.—*Antibiot. & Chemoth.* 8, 143-148. [Summary in Spanish p. 165.] [Authors' conclusions.] **3012**

Oral penicillin V in a dosage of 250 mg. three times daily (1.2 million units) and a single injection of 600,000 units of procaine penicillin intramuscularly give equal quantities of penicillin to combat an infection.

CORRADO, A. & VASSURA, G. (1957). Valore e possibilità attuali della terapia sulfamidica in alcune forme morbose degli animali domestici. [Sulphonamide therapy in diseases of domestic animals.]—*Veterinaria, Milano* 6, 203-205. **3013**

Using examples from their own experience the authors describe their results with various types of treatment, but predominantly with "Neazina" (sulphadimidine), sometimes with the addition of penicillin, in equine adenitis, pneumonia and bronchopneumonia, pneumonia and infectious rhinitis in pigs and foot rot and a variety of surgical conditions in cattle.

—G. P. MARSHALL.

RODE, C. P. (1958). Über weitere Anwendungsbereiche des Chemotherapeutikums Salthion. [Use of "Salthion" (a sulphonamide derivative) in veterinary medicine.]—*Prakt. Tierarzt* No. 2, pp. 36, 39-40, 42 & 44. **3014**

In addition to its established indications R. describes the use of "Salthion" (4-sulphanilamido-triethanolamine methane sulphonate), available as a 90% solution and in 10 g. capsules, for such indications as: complicated mastitis and foot disease in cattle (50 ml. or more per single i/v dose); in the drinking water of poultry for pullorum disease and coccidiosis; in swine erysipelas (1.8-2.0 ml./10 kg. i/v or s/c); and for influenza and other diseases of unweaned piglets (single dose of 5 ml. i/p).—G. P. MARSHALL.

GHIONE, M. (1958). Anti-infective action of an anabolic steroid.—*Proc. Soc. exp. Biol., N.Y.* 97, 773-775. [Author's summary modified.] **3015**

4-chlorotestosterone is an anabolic steroid comparable to testosterone, but with less androgenic potential. It enhances the intensity of anaphylactic shock in g.pigs, prolongs survival time of mice infected with *Nocardia asteroides*, or *Staphylococcus aureus*, hastens healing of cutaneous nocardiosis in rabbits, and nullifies the proinfective action of cortisone.

PIRES, A. (1958). Los corticosteroides en medicina veterinaria. [The corticosteroids in veterinary medicine.]—*Gac. vet., B. Aires* 20, No. 111, pp. 4-18. **3016**

A concise review (88 references) of the use of cortisone, hydrocortisone, ACTH, prednisone and α -fluorohydrocortisone in dogs, horses and cattle.—G. P. MARSHALL.

SUTTER, M. D. (1958). Phenylbutazone therapy in horses.—*Vet. Med.* 53, 83-85. **3017**

Phenylbutazone was used in oral doses

varying from 1 to 2 g. per 500 lb. per day in 4 cases of equine lameness due to different causes. A dramatic effect was obtained in the one case of severe chronic arthritis, a good to fair effect in 2 cases of trauma and a questionable result in a chronic case of founder. No side-effects or signs of toxicity were experienced.

—G. P. MARSHALL.

HANSSON, C.-H. (1958). **Studies on succinyl-choline as a muscle-relaxing agent in veterinary medicine.**—*Thesis, Stockholm* pp. 33. [In English.] **3018**

This is a summary, in English, of the author's work on the pharmacology of succinyl-choline and its use for casting farm animals. Details have been previously published in 8 separate articles.—R.M.

GEHRING, W. (1957). Versuche mit dem Muskel-relaxans My 301 an kleinen Wiederkäuern. I. Mitteilung. [Experiments with the muscle relaxant, guaiacol glycerol ether, in small ruminants.]—*Berl. Münch. tierärztl. Wschr.* **70**, 384-386. [English summary.] **3019**

Immediately after i/v inj. of 120 ml. of a 5% soln. of guaiacol glycerol ether ("My 301") in 5% laevulose, sheep and goats sank to the

See also absts. **2716** (staphylococcal mastitis); **2727 & 2729** (TB.); **2767 & 2771** (leptospirosis); **2779** (vibriosis in bulls); **2787** (colimycin); **2789** (bactericidal action of hexyl resorcinol aerosols); **2793** (epizootic lymphangitis); **2794** (flavofungin); **2795** (ringworm); **2801-2802 & 2805** (suramin); **2803 & 2810** (antrycide); **2804** (arsenobenzole and naganol); **2806** (furacin); **2807** (nitrofurazone); **2810-2811** (berenil); **2814** (rivanol); **2832** (local treatment of wounds to prevent rabies); **2833** (experimental rabies treatment); **2874** (disinfectants against Newcastle disease); **2886** (rickettsiosis); **2898-2900** (control of warbles); **2901** (parasiticides); **2908** (schistosomiasis); **2913, 2915-2916, 2919-2920 & 2922** (anthelmintics); **2938-2940** (float).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

BIGGERS, J. D., ASHOUB, M. R., McLAREN, A. & MICHEL, D. (1958). The growth and development of mice in three climatic environments.—*J. exp. Biol.* **35**, 144-155. [Authors' summary modified.] **3022**

Pregnant mice were placed in hot, temperate and cold rooms. The hot and cold environments were less favourable than the temperate as judged by prenatal and postnatal mortality of the young. The growth and development of the young was studied during the first 4 weeks of life. The inverse relation between body weight and number of mice in a litter, reflecting competition between litter-mates, was particularly marked in the cold and was still increasing 4 weeks after birth. In the hot and temperate environments the effect reached a maximum at 2-3 weeks of age. When allowance had been made for the effect of litter size on body wt., no significant differences in rate of growth or development were found between the mice in

ground and a state of muscular relaxation persisted for about 15 min. The action of the drug could be prolonged by i/v drip infusion. No side effects were noted. After administration of the drug, less anaesthetic was needed to produce general anaesthesia.—R.M.

SANGER, V. L. & SMITH, H. R. (1957). **General anaesthesia in birds.**—*J. Amer. vet. med. Ass.* **131**, 52-55. **3020**

A combination of equal parts thiopentone sodium and pentobarbitone sodium was administered i/m at approx. 70 mg./kg. body wt. for fowls and 220 mg./kg. for turkeys. A proprietary combination of chloral hydrate, pentobarbitone and magnesium sulphate was also tested on fowls and turkeys. Both anaesthetics caused inflammation at the site of injection, but all birds recovered. There was considerable variation between birds in the doses required.

—R.M.

NEAL, R. A. (1958). **Skin grafting in horses—A report of three cases.**—*Vet. Rec.* **70**, 401-404. [Author's summary modified.] **3021**

Three cases of skin grafting in treatment of wounds in horses are described, two of which were successful.

the hot and temperate environments. Both growth and development were markedly retarded in the cold.

HOLUB, A., FORMAN, Z. & JEŽKOVÁ, D. (1957). **Development of chemical thermoregulation in piglets.**—*Nature, Lond.* **180**, 858-859. **3023**

The authors measured oxygen consumption by piglets at different environmental temperatures. Not until the 6th day of life did piglets react to temporary exposure to low temp. (3°C.) by increased metabolism, and this mechanism was not fully developed until they were 20 days old.—R.M.

WHITTAKER, V. P. (1958). **Acetylcholine in milk.**—*Nature, Lond.* **181**, 856-857. **3024**

The author found the acetylcholine content of cow's milk to be negligible. The contractions of frog rectus muscle and g.pig ileum produced by milk or milk extracts were due to potassium, choline and histamine.—E. J. CASTLE.

BAILIE, M. J. & MORTON, R. K. (1958). Comparative properties of microsomes from cow's milk and from mammary gland. 1. Enzymic activities. 2. Chemical composition.—*Bio-chem. J.* **69**, 35-44 & 44-53. **3025**

Morton has previously described lipoprotein particles in cow's milk which he regarded as being microsomes [V.B. **23**, 2690 & **25**, 2102]. He has suggested that the "milk factor", associated with mammary carcinoma of mice is transmitted from mother to young by means of the microsomes. The present work demonstrated that, although microsomes from milk and mammary gland were not identical in their enzymic and chemical properties, milk microsomes were probably derived from gland microsomes. Therefore it was possible for the milk factor to be carried into the young in an almost unaltered state from the mammary gland.—R.M.

COWIE, A. T. & TINDAL, J. S. (1958). Adrenalectomy in the goat. Replacement therapy and the maintenance of lactation.—*J. Endocrin.* **16**, 403-414. [Authors' summary modified.] **3026**

The mean survival period of 12 goats after adrenalectomy was 7.8 ± 1.2 days. Adrenalectomy resulted in a progressive rise in the concentration of K and a fall of Na in the plasma. In the lactating goat there was a rapid inhibition of milk secretion and the conc. of K in the milk fell, while that of Na rose slightly as the yield dropped. Partial to complete maintenance of lactation was achieved in 5 lactating goats after adrenalectomy by implanting tablets of cortisone (or cortisone acetate) and deoxycorticosterone acetate (DCA), a daily absorption of at least 6-12 mg. cortisone (or its acetate) and 2.5 mg. DCA being required. DCA was the more critical component of the combination. During replacement therapy, when the daily milk yield had become relatively steady, the composition of the milk (fat and solids-not-fat percentages) and the Na and K concentrations in the milk were within the pre-operative ranges, but during the periods of adrenal insufficiency, when the milk yield declined, there was a concomitant rise in milk-fat percentage and a fall in milk K. These changes, however, also occurred when the milk yields fell from other causes and so they may not be directly attributable to the lack of adrenal steroids.

ANDERSEN, A. C. & GEE, W. (1958). Normal blood values in the beagle.—*Vet. Med.* **53**, 135-138 and 156. [Authors' conclusion modified.] **3027**

Blood values in the dog were studied from

embryonic development until senility. Definite trends were apparent during the first year of life. At one year of age blood values were characteristic of those in the adult. Sex differences and a diurnal pattern with physiological variations were noted. This diurnal pattern was similar to that reported for other species. R.b.c. values were consistently higher than those reported in the literature. Haemoglobin values in male dogs approached 18 g. per 100 ml. The major difference between dogs in this study and those in the field was in the diet.

GRANDADAM, M. A. (1957). Le pouvoir histaminopexique du serum du cheval. [Histamine-fixing ability of horse serum.] — *Bull. Acad. vét. Fr.* **30**, 165-169. **3028**

Continuing his previous studies [V.B. **27**, 2111], G. detected anti-histamine activity in serum from 25 of 29 healthy horses. There were large differences in the amount of activity between individuals.—R.M.

TALANTI, S. (1958). Observations on the hypothalamic-hypophysial neurosecretory system of the cow.—*Nord. VetMed.* **10**, 153-160. [In English. Summaries in German and Swedish. English summary modified.] **3029**

The distribution of the aldehyde-fuchsin positive material is similar to that of the Gomori-positive material in the hypothalamic-hypophyseal system of the cow. The amount of the neurosecretory material in the cow is small compared with that in other species. It is, concluded on the basis of the theory of neurosecretion, that the adaptable water metabolism of the cow is due to the scarcity of neurosecretory material.

WAITES, G. M. H. (1957). The functional innervation of the heart in the sheep.—*Abstr. Diss., Cambridge*, 1955-56. p. 57. [Author's abst.] **3030**

The work was done in order to align the knowledge of the cardiac nerves of the sheep with that of other species. A detailed and fully illustrated anatomical study of the cervical and thoracic autonomic nerves is given for the main purpose of assisting in understanding the precise sites of stimulation described in the section on the physiology.

In the section on the physiology the description falls into two parts. In the first part the training of three animals and the measurement of their normal blood pressure and heart rate is described. These animals were particularly valuable in giving information about the anaesthetics necessarily used in the second part, and in obtaining evidence about vagal tone in adult sheep. In the second part are given the

results from acute experiments in which efferent cardiac nerve pathways and their relay stations were examined. These pathways are so complex that it was not possible to do more than map the pathways of fibres concerned in controlling the heart in acute experiments.

FITZPATRICK, R. J. (1958). The response of the cervix uteri of ruminants to adrenaline.—*J. comp. Path.* **68**, 219-231. [Author's conclusions.]

3031

The action of adrenaline on the muscle of the cervix of sheep and cows has been studied with a cannula recording intra-uterine and intra-cervical pressures concurrently. The response of the cervical muscle is characteristically a short contraction followed by a longer inhibition.

Sex hormones appear to produce similar variation in the character of the cervical response of the corpus. However, the sensitivity of corpus and cervix to this action of sex hormones is dissimilar, so that at specified stages of reproductive activity responses of the two structures to adrenaline are completely independent and may even be in opposition.

The results of these experiments are interpreted in relation to earlier work.

SAINTE-MARIE, G. & LEBLOND, C. P. (1958). Tentative pattern for renewal of lymphocytes in cortex of the rat thymus.—*Proc. Soc. exp. Biol., N.Y.* **97**, 263-270. [Authors' summary modified.]

3032

Counts of resting and dividing cells in the cortex of the thymus of 10-week-old male rats reveal a high mitotic index of the 4 cell types present: reticular cells, large, medium and small lymphocytes. This observation indicates that each one of the 4 cell types is being renewed. Presumably this renewal yields lymphocytes which leave the thymus and enter the circulation. From the mean numbers of cells and of mitoses and the mean mitotic indices of the four cell types over a 24-hour period, a tentative scheme referred to as "Stem cell renewal theory" is presented to account for the continuous production of lymphocytes in the thymus: i.e., that each reticular cell at regular intervals yields large lymphocytes which pass through 4 generations and then produce medium lymphocytes, which in turn pass through 2 short-lived

generations and then give rise to small lymphocytes, of which there are also 2 successive generations.

MAJNO, G. & KARNOVSKY, M. L. (1958). A biochemical and morphologic study of myelinization and demyelination. I. Lipide biosynthesis *in vitro* by normal nervous tissue.—*J. exp. Med.* **107**, 475-496. [Authors' summary modified.]

3033

Samples of normal grey matter, white matter, and peripheral nerves from rats were incubated in Warburg vessels with glucose and a labelled lipide precursor (acetate, phosphate, choline, glycerol, glucose). The total lipides were then extracted and their radioactivity measured. The preparations were compared in respect of dry weight, lipide content, O₂ uptake, and ability to incorporate the various substrates into the lipides. Grey matter was found to be the least damaged by incubation, white matter the most. Damage to the tissue depressed lipogenesis to a greater extent than respiration.

Five substrates were compared as to their degree of incorporation into the lipides of the various preparations. White matter, which had a greater oxygen uptake than peripheral nerves, showed the lowest degree of incorporation for most of the substrates studied. The results suggest that there are considerable quantitative differences in the metabolism of central and peripheral myelin.

In the sciatic preparations, oxygen uptake and lipogenesis from acetate decreased from the proximal to the distal end of the nerve. This finding may be relevant to the pathogenesis of peripheral neuropathies.

The growth and metabolic activity of peripheral nerves were studied in rats aged 1 to 500 days, and the biochemical and histological findings were correlated. The results indicated that the lipogenetic activity of the Schwann cell was lowest in the new-born animal, and reached its peak about 20 days. Comparative data were also obtained from the cerebral cortex.

The growth pattern of peripheral nerves was distinctly different from that of the brain. With regard to changes in tissue weight, respiration, and lipogenesis, growing peripheral nerve correlated with body weight, while the brain matured much more rapidly.

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

OLIVANT, J. M. (1958). Studies in bacteriological meat inspection. II. A field study of bacteriological meat inspection in North-west England.—*Vet. Rec.* **70**, 307-313. [Author's

summary modified.]

3034

A field study of bacteriological meat inspection is described in which 8 of 18 abattoirs in a voluntary scheme lasting for 1 year sub-

mitted material from 93 "suspect" carcasses for bacteriological and physico-chemical examination. The proportion of carcasses sampled represented 0·01% of the annual kill in 18 abattoirs, and 0·024% of the annual kill in the 8 abattoirs which actively participated. Reasons for this poor response are discussed.

Independent abattoir and laboratory judgments on carcasses were at variance in 24 cases (25%). The results established that unacceptable, or potentially dangerous, carcasses are being released for human food, and 8 bacteremic carcasses (8%) were detected which had

been released by the meat inspectorate. Six of these could have been responsible for human illness.

A further 16 carcasses (17%) were condemned by meat inspectors although no confirmation for this could be found by laboratory methods. The significance of this result is discussed.

Details are given of the techniques of bacteriological meat inspection. Attention is drawn to an "incubation test" for detecting abnormal odours in muscle which was found to be more effective than boiling or frying tests.

See also absts. 2820 (survival of F. & M. disease virus in deep-frozen bacon); 2909-2911 (cysticercosis in man and animals).

REPRODUCTION AND REPRODUCTIVE DISORDERS

GREGOIRE, A. T., BRATTON, R. W. & FOOTE, R. H. (1958). Sperm output and fertility of rabbits ejaculated either once a week or once a day for forty-three weeks.—*J. Anim. Sci.* **17**, 243-248.

3035

Semen was collected from rabbits as often as once a day for as long as 10 months without their libido, production of spermatozoa, or fertility being impaired. The response of dairy bulls to similar treatment is being investigated.

—M.G.G.

VANDEMARD, N. L., MILLER, W. J., KINNEY, W. C., JR., RODRIGUEZ, C. & FRIEDMAN, M. E. (1957). Preservation of bull semen at sub-zero temperatures.—*Bull. Ill. agric. Exp. Sta.* No. 621, pp. 39.

3036

Motility of spermatozoa before and after freezing and thawing was studied in 20 consecutive ejaculates collected within a four-hour period from each of 6 bulls. Recovery of motility after freezing showed an upward trend in the first five ejaculates only, thereafter declining steadily; average percentage survival after freezing dropped from 81 on the first five ejaculates to 26·5 on the last five. Epididymal spermatozoa from 6 slaughtered bulls withstood freezing rather well; and so did washed spermatozoa. Optimum yolk and citrate concentrations in diluent were found to be 16 and 1·55% respectively. Dilution down to 10 million spermatozoa per ml. did not reduce recovery rate, but re-freezing did so significantly. Equilibration time was found optimal at 6 hours in the absence of sugars. Cooling at the rate of 1° to 4°C. per min. down to -20°C. was found to be optimal. Rapid cooling was detrimental even below this temp. A storage temp. of -65°C. was almost as effective as -79°C. but -51°C. was found completely ineffective at

only 5 days. It was confirmed that thawing must be carried out immediately before use.

—F. L. M. DAWSON.

PICKETT, B. W. & MERILAN, C. P. (1957). Localization of glycerol-1-C¹⁴ in bovine spermatozoa by an autoradiographic technique.—*Res. Bull. Mo. agric. Exp. Sta.* No. 644, pp. 28.

3037

It was concluded that glycerol-1-C¹⁴ apparently enters bovine spermatozoa and the greatest amount seems to accumulate in the nuclear area, followed by the mid-piece and tail in that order.—R.M.

BLACKSHAW, A. W. (1958). The effects of glycerol on the supra-vital staining of spermatozoa.—*Aust. vet. J.* **34**, 71-76. [Author's summary.]

3038

A supravital strain containing congo red and nigosin gave satisfactory results with bull and ram spermatozoa and it may be used to replace eosin-nigosin stains with advantage. Levels of glycerol as low as 4% gave considerable protection to frozen bull and ram spermatozoa. Glycerol concentrations up to 15% did not appear to affect seriously the estimates of live spermatozoa obtained with eosin or congo red.

CEGIELKA, M. (1958). A qualitative study on the amino acids in the semen from ox, dog and pig. A preliminary report.—*Nord. VetMed.* **10**, 93-101. [In English. Summaries in German and Swedish. Author's summary modified.]

3039

Paper chromatographic separation of amino-acids in the semen of bulls, dogs and pigs showed that the number varied according to species. Amino-acids were liberated when the

semen was stored 4-6 hours at room temp., but later they disappeared. Dog semen had more amino-acids than the bull and pig semen. The results are tabulated.

KULESHOVA, V. G. (1958). [Influence of pH of diluted, stored rabbit semen on viability, fertilizing capacity and sex of offspring.] — *Proc. Lenin Acad. agric. Sci.* **23**, No. 3, 40-44. [In Russian.]

3040

Rabbit semen diluted with a medium of glucose, citrate and egg-yolk lived longest at pH 7-7.2 when stored at freezing point; it gave a high conception rate and a high viability of offspring. Storage at a more alkaline pH reduced fertility but increased size and weight of litters. Storage at a neutral pH resulted in a relatively greater number of female offspring, while storage at acid pH, apart from reducing the viability of the semen and the offspring, resulted in a relatively greater number of males in each litter.—R.M.

VAN TIENHOVEN, A., STEEL, R. G. D. & DUCHAINE, S. A. (1958). Diluents for turkey semen.—*Poult. Sci.* **37**, 47-53. [Authors' summary modified.]

3041

Turkey semen diluted 1:15 with milk or Tyrode solution with and without glycine and antibiotics was tested for fertilizing capacity, as well as for viability after storage at 5° C. Addition of either antibiotics or glycine resulted in higher fertility when added to the Tyrode, but when added to milk decreased fertility. The combination of glycine and antibiotics was even more harmful when added to milk, whereas in the Tyrode solution addition of both antibiotics and glycine had no effect. The performance of a diluent could not be predicted from *in vitro* studies of motility and metabolic activity before and after storage. Tyrode solution with added antibiotics or glycine gave the best fertility, although this was still about 15% below that of diluted semen.

CROSS, B. A. & GLOVER, T. D. (1958). The hypothalamus and seminal emission.—*J. Endocrin.* **16**, 385-395. [Authors' summary modified.]

3042

Stimulation of the hypogastric nerves in adult male rabbits under pentobarbital sodium anaesthesia caused immediate contractions of the cauda epididymidis, vas deferens and seminal vesicle, with emission of semen. Kymographic records were obtained of the contractions of the seminal vesicle. I/v injections of 1-5 µg. adrenaline gave similar effects, but with latencies of 7-30 sec. Measured by its action

on the seminal vesicle, adrenaline was 2-5 times more potent than noradrenaline. Electrical stimulation of the dorsal, lateral or posterior areas of the hypothalamus evoked an immediate contraction of the seminal vesicle followed by a delayed contractile effect. Contractions of the cauda epididymidis and vas deferens also occurred. The immediate response of the seminal vesicle to stimulation of the hypothalamus was abolished by section of the hypogastric nerves, and the delayed effect by adrenalectomy. After these interferences the two types of response could be simulated by stimulation of the peripheral end of the cut hypogastric nerves, and by injection of 1-5 µg. adrenaline, respectively. Neither electrical stimulation of the neurohypophysis, nor injection of oxytocin or vasopressin induced a contraction of the seminal vesicle. The results are discussed with reference to the influence of sexual excitation at coitus on the volume and quality of ejaculated semen.

I. BERG, O. A. (1958). The normal prostate gland of the dog.—*Acta endocr., Copenhagen* **27**, 129-139. [In English.]

3043

II. BERG, O. A. (1958). Parenchymatous hypertrophy of the canine prostate gland.—*Ibid.* 140-154. [In English.]

3044

III. BERG, O. A. (1958). Effect of stilboestrol on the prostate gland in normal puppies and adult dogs. — *Ibid.* 155-169. [In English.]

3045

I. An account of the morphology and histology of 20 prostate glands. Digital palpation *per rectum* was found to provide a sufficiently accurate guide to the size of the gland for clinical use. The histological findings did not support the opinion of Kottmann [*Diss. Munich*, 1935] that the structure of the prostate gland of the dog was similar to that of man.

II. B. discussed the literature on prostate hypertrophy in dogs and described the morphology and histology of 10 cases and the treatment with stilboestrol of 25 cases. The daily dose of stilboestrol was 0.2-0.3 mg./kg. body wt. for 10-20 days, administered by mouth or i/m inj.: the toxicity of this hormone for dogs was discussed.

III. In normal male puppies the prostatic signs of excessive oral administration of stilboestrol were less pronounced dorsocranially of the colliculus seminalis than in other parts of the gland. This might indicate, in contrast to what is believed to be the case in man, the dorso-cranial part of the canine prostate is only slightly sensitive to oestrogenic stimulation.

SCHODER, H. (1957). Das chronische Euterödem des Rindes. [Chronic oedema of the udder in cows.]—*Inaug. Diss., Munich* pp. 91. 3046

Chronic mammary oedema, lasting for several weeks or even months after parturition, was observed in 47 cows. It reappeared at succeeding pregnancies and led to enlargement and hardening of the udder. Aetiology was discussed: there were some similarities to capillariopathia gravidarum in women. Treatment consisted of exercise on pasture, massage of the udder, reduction in protein intake. The condition should be eliminated by selective breeding.

—R.M.

DEININGER, G. (1957). Histologische Untersuchungen an der Gebärmutter schleimhaut des Rindes im Hinblick auf die Biopsie. [Histology of the uterine mucosa in cows, with reference to biopsy.]—*Inaug. Diss., Munich* pp. 51. 3047

Study of uteri from 36 slaughtered cows indicated that 80% of biopsy specimens were representative of the whole uterus. D. discussed histological diagnosis of endometritis. In preparing biopsy material, paraffin embedding gave better results than frozen sections.—R.M.

I KAWASE, T. et al. (1956). [Studies on the early diagnosis of pregnancy for cows.]—*Rep. Inst. Anim. Hlth, Miyazaki Pref.* No. 2, pp. 1-33. [In Japanese. Summary in English.] [English abst. in *Acta vet. japon.* 2, 19 (1957) modified.] 3048

II. KAWASE, T., KAMIYA, S. & UEDA, S. (1956). [Studies on the early diagnosis of pregnancy for goats and ewes.]—*Ibid.* pp. 34-42. [In Japanese. Summary in English.] [English abst. in *Acta vet. japon.* 2, 19-20 (1957) modified.] 3049

I. The authors investigated the viscosity of the mucus collected from the uterine cervix of pregnant and non-pregnant cows, using a special collecting instrument. They claimed that it was possible to use the difference of viscosity for the early diagnosis of pregnancy.

II. The authors applied to goats and ewes the method they had devised for the early diagnosis of pregnancy in cows, examining physical changes of the cervical mucus. They found the method useful also for the early diagnosis of pregnancy in goats and ewes.

SPECTOR, W. G. & STOREY, E. (1958). A factor in the oestrogen-treated uterus responsible for leucocyte emigration. — *J. Path. Bact.* 75, 387-398. [Authors' summary modified.] 3050

Ovariectomised mice given repeated daily

injections of oestrogen developed infiltration of the wall of the uterus with leucocytes. A factor was extracted from the uterine tissue that on injection into rat skin caused an immediate emigration of polymorphonuclear leucocytes from small blood-vessels. The effect of these extracts on leucocyte emigration was much greater than that of other tissue extracts or of various substances known to increase capillary permeability or to be chemotactic to leucocytes *in vitro*. An extract with similar properties was obtained from the uterus of rat and mouse at oestrus when the uterus was infiltrated with leucocytes. At other stages of the oestrous cycle, when leucocytes were absent or scanty, extracts failed to cause leucocytic emigration.

SHORT, R. V. (1958). Progesterone in blood. I. The chemical determination of progesterone in peripheral blood. II. Progesterone in the peripheral blood of pregnant cows. — *J. Endocrin.* 16, 415-425 & 426-428. [Author's summary modified.] 3051

I. A method is described for the chemical determination of progesterone in the peripheral venous blood of women, mares, cows, ewes and sows. The recovery rate of progesterone added to human plasma is $73 \pm 4\%$; in the cow, the recovery rate is $63 \pm 1.9\%$. In pregnant women approx. 25 ml. of plasma is sufficient for an assay, but in domestic animals the blood conc. of progesterone is much lower and a 500 ml. sample of plasma is usually required. The method has been used for the determination of blood progesterone levels in both pregnant and non-pregnant domestic animals. In addition the method allows the simultaneous determination of two other related compounds found in peripheral blood: 20α and 20β -hydroxypregn-4-en-3-one.

In routine laboratory determinations, results can be obtained within 24 hours of receipt of a blood sample, and it is possible to carry out a number of assays in a day.

If small amounts of progesterone are incubated with whole ox blood at 37°C . there is a slow transformation (half-life approx. 7 hours) to 20β -hydroxypregn-4-en-3-one.

II. The content of progesterone was determined in the peripheral venous blood of cows from the 32nd day of pregnancy until the day before calving. It ranged from 0.74 to 0.98 μg . progesterone per 100 ml. plasma throughout the 32nd-256th day period, but thereafter a marked decrease was observed, and on the day before calving the level was 0.1-0.4 μg . per 100 ml. plasma.

EDGAR, D. G. & RONALDSON, J. W. (1958). **Blood levels of progesterone in the ewe.** — *J. Endocrin.* **16**, 378-384. [Authors' summary modified.] **3052**

Progesterone levels in the blood of ewes were assayed chemically. No progesterone was detected in blood from the jugular vein of any ewe. Progesterone was found in blood from the vein draining the active ovary during the oestrous cycle. Detectable amounts appeared on the 3rd day, and the mean concentration increased to about 1.8 µg./ml. on the 7th day. This level was maintained until the 16th day and fell to less than 0.15 µg./ml. on the 17th or last day of the cycle. Blood from the vein draining the active ovary during pregnancy showed a mean level similar to that reached during the oestrous cycle until about the 17th week when it gradually fell to, and remained at, less than 0.15 µg./ml. a few days before parturition. In blood from the vein draining the pregnant horn of the uterus, progesterone was detected in low conc. between the 9th and 18th weeks of pregnancy in only 6 of 143 cases. Considerable variation between ewes was found.

BERGSTROM, G., JOHANSSON, H. & WESTIN, B. (1958). **The occurrence of mast cells in the mouse uterus in prolonged oestrogenic treatment.** — *Acta path. microbiol. scand.* **42**, 198-200. [In English. Authors' summary modified.] **3053**

The occurrence of mast cells in the mouse uterus was studied after bilateral oophorectomy. The number of visible metachromatic mast cells per transverse section was significantly suppressed in prolonged oestrogen treatment as compared with untreated controls.

LOMBARDO, N. (1957). L'azione degli ultrasuoni sullo stato di gravidanza della coniglia. [Effect of ultrasonic waves on embryonic development and pregnancy in rabbits.] — *Nuova Vet.* **33**, 401-412. [Summary in English.] **3054**

In the course of experiments on pregnant rabbits it was observed that a total dose in excess of 20 watts/cm² had a deleterious effect on embryonal development and on the viability of the foetuses, probably due to the degenerative changes which occurred in the ovaries (especially the follicles), placenta and, to a less extent, the uterus.—T.E.G.R.

MCENTEE, K. (1958). **Pathological conditions in old bulls with impaired fertility.** — *J. Amer. vet. med. Ass.* **132**, 328-331. [Author's summary modified.] **3055**

At P.M. examination of 91 bulls, 9 to 16

years of age, an attempt was made to detect lesions in the genital organs, and elsewhere, which might be associated with lowered fertility and inability to serve. In the testes, focal degeneration of the seminiferous tubules, calcified tubules, interstitial fibrosis, and Leydig cell hyperplasia were common. Interstitial cell tumours were found in 11 old bulls, predominantly in Guernseys. Lesions in the epididymis, seminal vesicle, or ampulla were rare. Lymphocytic nodules (granular venereal disease) were found on the penis of many bulls and apparently were not correlated with fertility. Necrosis and calcification of the retractor penis muscle, present in many bulls, had no apparent correlation with ability to serve an artificial vagina. Degenerative joint lesions and vertebral exostoses, present in many of the bulls, were probably the cause of some locomotor disturbances.

BUTZ, H. & MEYER, H. (1957). **Epitheliogenesis imperfecta neonatorum equi.** [Epitheliogenesis imperfecta in foals.] — *Dtsch. tierärztl. Wschr.* **64**, 555-559. **3056**

The authors reported 28 cases in which various parts of the body, often limbs, were hairless. Affected foals died soon after birth. The condition was thought to be due to a lethal recessive gene, not sex-linked.—R.M.

NIHLEEN, B. & ERIKSSON, K. (1958). **A hereditary lethal defect in calves — atresia ilei.** — *Nord. VetMed.* **10**, 113-127. [In English. Summaries in German and Swedish. Authors' summary modified.] **3057**

An account of six cases of a parturition complication in the Swedish Highland breed of cattle. The abdomen of the calves was greatly distended, preventing normal parturition and necessitating extensive embryotomy. The condition was caused by atresia of the ileum with accumulation of intestinal contents dilating the intestine to an average diameter of 5 to 6 cm. The defect occurred after inbreeding with a certain Swedish Highland bull. It is caused by an autosomal, recessive lethal factor in the homozygous state.

POBISCH, R. (1957). **Familiäres Auftreten von epileptiformen Anfällen bei einer nichtleuzistischen Kaninchenrasse.** [Familial epileptiform disease in a breed of rabbits.] — *Wien. tierärztl. Mschr.* **44**, 193-199. [Summaries in English, French and Italian.] **3058**

Epilepsy in the White Yellow-Silver breed of rabbits closely resembled that previously described as occurring only in White Viennese rabbits.—R.M.

- ELLIS, D. J., BARNER, R. D., MADDEN, D., MELCER, I. & ORTEN, J. M. (1958). **Congenital porphyria (pink tooth) in Michigan.** —*Mich. St. Univ. Vet.* **18**, 89-94. [Authors' summary modified.] **3059**

Congenital porphyria is described in Holstein-Friesian cattle. The symptoms are lesions of photo-sensitization in unpigmented areas,

See also absts. **2733** (foetal infection with Johne's disease); **2746** (*S. abortus-ovis* infection); **2752-2763** (brucellosis); **2778-2780** (vibriosis); **2784** (changes in rat placenta and foetus following experimental bacterial infection); **2844** (equine virus abortion); **2934** (fish meal and hatchability); **2935** (nutritional stress and infertility in mice); **2970** (convulsions in new-born foals); **2976** (bovine epizootic abortion); **3011** (action of antibiotics on bull spermatozoa, *Tr. foetus* and *V. fetus*); **3031** (cervical response of adrenaline in ruminants); **3076** (book, breeding problems and artificial insemination).

ZOOTECHNY

- FRANKEL, H. M., FOLK, G. E., JR. & CRAIG, F. N. (1958). **Effects of type of restraint upon heat tolerance in monkeys.** —*Proc. Soc. exp. Biol., N.Y.* **97**, 339-341. **3060**

The authors found that Macaca monkeys attached to an animal board by the wrists and ankles with arms and legs extended were unable to maintain their temperature equilibrium. When restrained on a wire mesh platform by means of a neck yoke and with arms along the side of the body, the equilibrium was not upset.

—R. N. FIENNES.

- MCHUGH, J. F. & CANNON, D. J. (1958). **Some effects of hexoestrol implants on sucker lambs.** —*J. Dept. Agric. Vict.* **56**, 155-157, 159 & 161. [Authors' conclusion modified.] **3061**

Implantation of 15-mg. hexoestrol tablets into Southdown and Dorset Horn lambs aged between 6 and 15 weeks, under several different management conditions, failed to yield any economic benefit. Small increases in carcass weight and dry-skin weight were offset by lower carcass quality. From the findings of these investigations, hormone treatment of lambs cannot be recommended.

- LAMBOURNE, L. J. (1958). **The effect of stilbestrol implants upon the growth and fattening of Romney wether lambs.** —*N. Z. J. agric. Res.* **1**, 69-79. [Author's summary modified.] **3062**

The implantation of 20 mg. of stilboestrol

See also absts. **3077** (book, indigenous cattle of British dependent African territories); **2078** (book, bird hybrids).

TECHNIQUE AND APPARATUS

- GROSS, W. O. (1957). Reine Impfdosen. [**Apparatus for uncontaminated injections.**] —*Berl. Münch. tierärztl. Wschr.* **70**, 303-305. [Summary in English.] **3064**

G. described an apparatus for coupling

anaemia, unthriftiness, discolouration of teeth, bones, and urine. The urine may appear normal in colour but contains abnormal amounts of porphyrins. Haemoglobin appears to be consistently low. Congenital porphyria appears to be inherited as a simple recessive. The biochemical findings in these cases confirm the clinical diagnosis. Carrier animals appear to be normal.

in Romney wether lambs at docking age had only a transient effect on growth rate and no effect on live weight at slaughter age. The treatment caused a slight reduction in the "finish" of lambs.

The magnitude of the response obtained was not influenced by the age and weight of lambs at time of implantation or by the use of higher dose rates of stilboestrol.

Treatment of lambs with stilboestrol is unlikely to be of any value in fat lamb production in New Zealand.

- LAMPKIN, G. H., QUARTERMAN, J. & KIDNER, M. (1958). **Observations on the grazing habits of grade and zebu steers in a high altitude temperate climate.** —*J. agric. Sci.* **50**, 211-218. [Authors' summary modified.] **3063**

An account of two series of observations in an environment where maximum daily temperatures did not exceed 74°F. No signs of heat stress were found in either group and the steers used were able to adopt a reasonable pattern of behaviour and graze throughout the day like cattle in other temperate regions. Under wet conditions the zebras reacted to the cold much more than did the grades and did so by standing instead of lying down. There were considerable differences (both between the groups and between individuals within groups) in the amounts of water drunk and it is suggested that these differences may result from the steers' efforts to maintain a homothermic state.

specially-designed hypodermic needles to a multi-dose syringe in such a way that the contents of the needle could not contaminate the syringe nozzle. The device was proved effective by using artificially infected needles.—R.M.

MOLLISON, P. L., ROBINSON, M. A. & HUNTER, D. A. (1958). Improved method of labelling red cells with radioactive phosphorus.—*Lancet* April 12th, 766-769. [Authors' summary modified.] **3065**

When r.b.c., washed once in citrate, are incubated with radioactive phosphorus at 37°C., the rate of uptake of phosphorus is very rapid, the process having a half-time of about 5 min. This acceleration seems to be due to the removal of competing anions, since it is also produced when the r.b.c. are washed in sucrose.

R.b.c. so labelled may conveniently be used for estimating the red-cell volume, because the rate of loss of ^{32}P from such labelled r.b.c. is not significantly more rapid, either *in vitro* or *in vivo*, than that observed when r.b.c. are labelled in the usual way.

See also absts. 2714 (Whiteside and California tests in mastitis); 2722 (paper electrophoresis of whey in TB.); 2731 (cultivation of *Mycobact. balnei*); 2776 (cultivation of *Clostridium botulinum*, type C); 2785-2786 (intra-oral inoculation of mice with pneumonia); 2823 (typing and cultivation of F. & M. disease virus); 2824 (cultivation of F. & M. disease virus in tissue culture); 2835 (ultrasonic vibration for liberation of cell-bound vaccinia virus); 2843 (liver biopsy in diagnosis of equine infectious anaemia); 2859 (multiplication and cytopathogenicity of "haemagglutinating virus of Japan" in tissue culture); 2864 (propagation of Rubarth's virus in tissue culture); 2868 (passage of fibroma virus in baby mice); 2870 (study of fowl plague virus in explants of HeLa cells); 2885 (monolayer cultures); 2907 (flootation of fasciola eggs in faeces); 2918 (diagnosis of lungworm infestation); 2937 (collection of forage samples from grazing sheep); 2971 (electrocardiography in horses); 3048-3049 (diagnosis of pregnancy in ruminants).

REPORTS

NORTHERN IRELAND. (1957). Agricultural Research Institute, Hillsborough, Co. Down. Thirtieth annual report, 1956-1957. pp. 40. Hillsborough: The Institute. [Items of veterinary interest pp. 30-35.] **3067**

PARASITISM in intensively managed lambs was studied on plots that had been used in 1954 when there was no parasitic problem. In 1955 a mild outbreak of NEMATODIRUS disease occurred in the lambs. In the spring of 1956 there was a severe outbreak and 6 lambs died. The lambs each year were known to be free from infection when put on the plots and only one ewe was excreting *Nematodirus* eggs each year. The plots were unoccupied from August 1955 to April 1956 so the infection persists for at least 8 months. *Nematodirus* eggs were first found in the winter of 1956 and infective larvae in February 1957 and the greatest number of larvae in March; after this they declined in numbers. Results of similar investigations show that infection of pasture persists as eggs for at least a year; third stage infective larvae hatch direct from these eggs, mainly in the spring, giving a peak of potential infectivity in the spring of the year after they are deposited on the pasture. Many lambs in the experiment, when examined at the abattoir, had pulmonary lesions of the type associated with *Muellerius capillaris* infestation but none had shown clinical signs of the condition.

PARASITIC BRONCHITIS (HOOSE) of cattle.

This method of labelling is considerably more convenient than that currently in use. Not only is it more rapid but also it is more complete; hence the r.b.c. need less washing. Very close agreement with simultaneous estimates made by the ^{51}Cr method was observed in 7 cases.

MÅNSSON, J. & OBEL, N. (1958). The technic of adrenalectomy in the ruminant.—*Cornell Vet.* 48, 197-201. [Authors' summary modified.] **3066**

Because of the special anatomical conditions adrenalectomy in ruminants presents considerable technical difficulties. The authors describe the technique by which they succeeded in carrying out bilateral adrenalectomy in four sheep and one of three bulls.

Under conditions in Northern Ireland *Dictyocaulus viviparus* larvae may persist over winter without a continuing source of infestation. Affected young cattle appear to survive, whether treated or not, if they are kept under suitable conditions of shelter and feeding during the winter.

A good response to vaccination with *Br. abortus* Strain 19 was obtained in 14 cows and for a period of 6 to 8 weeks antibody was detected in milk but not in the vaginal secretion.

Following good results obtained in 1955-56 in the prophylaxis of STAPHYLOCOCCAL MASTITIS, autogenous toxoid vaccinations have been continued but the appearance of STREPTOCOCCAL MASTITIS in the vaccinated animals as well as in the controls has been a complicating factor. Vaccine was less effective in preventing the development of infection than in keeping infection sub-clinical.

In a group of calves fed an aureomycin supplement for six weeks, all made good live weight gains and none suffered from white scour. At 10 weeks the control group showed little difference from the treated group.

—J. A. GRIFFITHS.

NORTHERN IRELAND. (1957). Sixth report upon the Agricultural Statistics of Northern Ireland 1930 to 1953. pp. 159. Northern Ireland: Belfast: Her Majesty's Stat. Off. 7s. 6d. **3068**

In the years 1931-40, 1951 and 1953 the

numbers of animals were, respectively:- cattle 703,112, 960,746, 936,482; sheep 822,118, 672,218, 895,370; pigs 431,940, 584,941, 758,841; poultry 15,416,156, 17,837,936, 14,607,500.

The increasing importance of livestock in Northern Ireland agriculture is shown by a table giving the total increases since 1851; poultry were eight times, sheep nearly four and a half times and pigs three and a half times as numerous in 1953.

In 1861 there were 114,939 horses and by 1953 there were only 32,500. This included only 636 under 1 year.

Births of livestock per 1,000 female breeding stock in 1930, 1939 and 1953 were:- calves 807, 884, 902; sheep 1,151, 1,138, 1,190; pigs 11,968, 13,437, 11,284; foals 662, 582, 399.

Mortality among livestock per 10,000 in 1936 and 1953 was:- milch cows 101, 71; other cattle 207, 209; sheep 449, 564; pigs 628, 956.

The value of the total livestock and products has increased from an average for the years 1930 to 1935 of £9,671,000 to £79,216,000 in 1953-54, and that of the total crops from (average) £2,093,000 to £8,050,000.

There are 159 pages of tables and comment from information collected during the past 107 years at farm to farm visits.—J. A. GRIFFITHS.

NEW ZEALAND. (1957). Department of Agriculture. Annual report of the Director-General of agriculture for the year ended 31st March 1957. [FAWCETT, E. J.] pp. 187. Wellington: R. E. Owen, Govt. Printer. 3069

There was no serious outbreak of contagious disease during the year under review.

Cattle condemned for TB. numbered 9,505 including 5,162 advanced cases. The total number of cattle tuberculin-tested in town supply herds was 63,423 of which 3,167 reacted (overall 5%). In herds other than town supply, 22,456 were tested with 1,037 reactors. All reactors were slaughtered. No outbreak of ANTHRAX occurred and the incidence of BLACK-LEG remained unchanged.

Haemaphysalis bispinosa is the only tick affecting stock in New Zealand and there are no blood protozoan diseases in the country.

61,921 calves were inoculated officially against BRUCELLOSIS in addition to those done privately or through clubs.

A considerable amount of FACIAL ECZEMA occurred in sheep and lambs in certain districts.

LEPTOSPIROSIS was found in cattle, sheep and pigs, but there was no change in its inci-

dence, although in a number of instances it was reported that the health of people who handled the animals was affected.—D. S. RABAGLIATI.

CYPRUS. (1957). Department of Agriculture. Annual report of the Chief Veterinary Officer for 1956. Supplementary report VI. [ORHAN, A.] pp. 22. 3070

The treatment of LIVER FLUKE INFECTION by injection of carbon tetrachloride into the rumen was continued.

There is compulsory vaccination of all sheep and goats against ANTHRAX; 715,712 were vaccinated during March, April and May. Only two outbreaks occurred involving a flock of sheep and a mule in Nicosia District.

SHEEP POX appeared in a mild form after an interval of 13 years.

FOOT AND MOUTH DISEASE, TYPE A, was diagnosed in both cattle and sheep. This is the first record of the disease since 1917.

Preventive vaccination is now keeping ENTEROTOXAEMIA under control. 30,300 sheep were vaccinated.

60,000 sheep and goats were treated for PARASITIC GASTRO-ENTERITIS. Regular dosing with copper sulphate and phenothiazine of all sheep and goats over the whole island with supplementary feeding and improved management kept the death rate low.

Coccidiosis in goats continues to be a major problem. Dosing with meprazine hydrochloride regularly and hand-feeding checked some outbreaks and in others sulphaguanidine and sulphadimidine were used but their high cost limited their use. A cheaper remedy is being sought.

Four outbreaks of ovine SALMONELLOSIS occurred and streptomycin was the most effective drug given orally.

PIROPLASMOSIS in sheep is controlled by dipping. There are 82 tanks, "most of them in good working order". More than 250,000 sheep were dipped.

Goat warble fly (*Hypoderma aeratum*) and sheep nostril fly (*Oestrus ovis*) are prevalent and need more extensive measures for eradication.

Dairy cattle tuberculin tested in Nicosia and Paphos were free from reactors.

NEWCASTLE DISEASE, FOWL POX, FOWL TYPHOID and SPIROCHAETOSIS all occurred during the year.

The percentage of HYDATID INFESTATION in the abattoirs of the four principal towns varied from 17.5% to 38.2%. In three of these towns the infestation was over 33%. In some areas the infestation was as much as 100% in sheep and goats.

In the section on the work of the Veterinary Laboratory details are given of the vaccines prepared and those imported and issued for field use.—J. A. GRIFFITHS.

JAMAICA. (1956). *Annual Report of the Department of Agriculture for the year ended 31st December, 1955.* pp. 74. Kingston: Government Printer. 4s. [Report of the Veterinary Division pp. 40-49.]

3071

Diseases and numbers of animals vaccinated were—ANTHRAX 6,463; BLACKLEG 6,309; SWINE FEVER 1,322; BRUCELLOSIS 1,403; HAEMORRHAGIC SEPTICAEMIA 109; FOWL POX 1,027.

ANAPLASMOSIS is endemic; TETANUS incidence is high; ULCERATIVE LYMPHANGITIS still persists on some of the sugar estates. Parasitic conditions include liver fluke in cattle, HAEMONCHUS CONTORTUS, ascaris, strongyles and other worms in calves; OESOPHAGASTOMUM DENTATUM and STEPHANURUS DENTATUS in pigs; strongyles and bots in equines; ascaris and tapeworms in poultry.

Deficiency disease occurred, especially on the bauxite soils.

WARTS in cattle are very prevalent. Two B.H.C. proprietary dipping fluids tested are said to have been ineffective.

The Veterinary Laboratory examined 3,937 specimens and made 225 P.M. examinations. Details are given of the operations of the Livestock and Pastures Divisions.

—J. A. GRIFFITHS.

—. TANGANYIKA. (1957). *Annual report of the Veterinary Department, 1955. Vol. II. Research and statistics.* pp. 59. Dar es Salaam: Government Printer. 3s. [For volume I of this report see *V.B.* 27, 3152.]

3072

This details the work of Mpwapwa veterinary research laboratory, including the sections of chemistry, pasture research, and livestock research; also the veterinary training centre, a dipping scheme in one district and a disease survey in another. There are statistics for the livestock population of Tanganyika and for the value of animal products. Details of most of the current research work have been or will be published in periodicals.—R.M.

NORWAY. (1958). *Veterinaervesenet 1955. [Annual report of the Norwegian Veterinary Service, 1955.]* —*Norges offisielle Statistikk Ser. 11. No. 291.* pp. 109.

3073

[For previous reports see *V.B.* 28, 1284-85.]

Norway has remained free from bovine

brucellosis, foot and mouth disease, rabies, and swine fever. Only 17 fresh cases of bovine TB. were diagnosed, all in one herd, and 5 were slaughtered. TB. was diagnosed in 459 pigs and 59 poultry flocks. Porcine atrophic rhinitis affected 5,031 pigs; bovine malignant catarrh affected 433 cattle. There was one case of equine infectious anaemia. Goitre occurred in 20 horses, 179 cattle, 767 sheep, 14 goats, 44 pigs and 3 dogs. The report contains many other data on infectious and non-infectious diseases.

—R.M.

U.S.A. (1958). *Los Angeles County Livestock Department annual report for 1956-1957.* [SCHROEDER, R. J.] pp. 62. Los Angeles: The County Livestock Department.

3074

A programme for MASTITIS control was modified by introducing the "California" milk test described by O. W. Schalm. The cooking of pig swill, compulsory since 1954, led to a big reduction in the incidence of VESICULAR EXANTHEMA in pigs; there were no outbreaks in the current year. INFECTIOUS BOVINE RHINOTRACHEITIS has affected at least 67 premises and 1,208 cattle (of which 37 died) since the disease was first recognized in 1953. (There are 117,000 cattle in the County.) DIARRHOEA in cows was attributed to hay containing 6-11 p.p.m. molybdenum. Following an outbreak of SCRAPIE in northern California, 141 sheep in Los Angeles County which might have had contact with the disease were slaughtered as a precautionary measure.—R.M.

U.S.A. MONTANA. (1957). *Report to the Montana Livestock Sanitary Board. July 1, 1956 through June 30, 1957.* [SAFFORD, J. W.] pp. 42.

3075

The report is mimeographed. Montana is a cattle and sheep exporting State and emphasis is laid on the need to maintain a high standard of health in order to maintain good prices for livestock.

Thirty-seven of the 56 counties in the State have been declared "modified-certified brucellosis-free" areas. 302,462 herds were tested during the year, with 0·95% reactors. A graph shows the percentage in reactors found in tests since 1931. There was a very rapid drop in the first six years to about 4%; the rate remained at that level until the new campaign was put in operation in 1954 and has dropped rapidly to the present figure.

BACILLARY ICTEROHAEMOGLOBINURIA in cattle is enzootic in some areas. Vaccination is practised. FOOT ROT in cattle is sufficiently serious to merit more investigation.

Coccidiosis in calves causes losses on many ranches. Anaplasmosis occurs in certain areas and preventive vaccination is practised.

UROLITHIASIS (652 cases) is an important condition that requires investigation.

JOHNE'S DISEASE in sheep is causing concern, but no indication is given as to its extent. There is no mention that the disease occurs in cattle in the State. The johnin test is being used and in one flock, 8% of 4,447 reacted.

—W.A.P.

BOOK REVIEWS

VAN RENSBURG, S. W. J. (1957). Breeding problems and artificial insemination. pp. 249. Pretoria: Libagric. 28s. 6d. 3076

The book is written specifically for farmers but the author avoids making the mistake of "talking down" to them. 66 pages relate to artificial insemination; in general this section is eminently practical and up to date on all farm species, and sufficiently detailed. The sections on its application to ranching conditions and to Karakul sheep breeding are of refreshing interest to the European breeder. The use of test heifers against vibriosis etc. is compulsory in South Africa before bulls can be approved for public A.I. use. Possibly van Rensburg's enthusiasm for bulls able to transmit high milk yielding capacity as evaluated by heifer progeny test, irrespective of other characteristics and circumstances, is a little uncritical. Longevity and feed conversion ability may be equally important.

The 98 pages devoted to the various aspects of infertility are more uneven in quality. The chapter on sheep infertility is of great interest; probably no other worker has given so much thought to these problems in the sheep. Two other good chapters are those on the interruption of pregnancy (except for the contention that vitamin E deficiency is concerned in cattle), and on bull infertility. The author's preference for hand as opposed to free service is obviously justified in its relation to the ranching and semi-ranching conditions in S. Africa, and to the high incidence of venereal disease; however, it is difficult to agree that for a bull to walk after his cows involves an excess of hard physical work—in Russia the regular daily use of bulls for medium cultivations is claimed to result in exceptionally high fertility rates. The author's treatment of functional infertility is also enlightened; due stress is given to the importance of not expecting too much of an animal, the recent work on nutrition in this relation receives in general adequate interpretation; the claim that fatty deposits in the ovarian bursal fundus interfere with its function is noteworthy. But criticism is inevitable on some points of detail in this chapter. Evidence compiled by the reviewer suggests that van Rensburg's recom-

mended age of 15 months for first service of heifers is too low. De Lange's work (which has not been repeated) is stressed to emphasize the danger of leaving service too late, but he did not claim adverse results until first service was delayed to 36 months. The conclusion that it is continued progesterone secretion (only) that favours uterine infection, ignores work showing that continuous influence of oestrogen is at least equally effective. By European standards, trace element supplementation and hormone therapy seem to be unduly "played down" but in S. African conditions this may be necessary to restrain farmers from misuse of these methods.

The chapters on infectious infertility do not attain so high a standard. Some authorities will disagree with the views that *Vibrio fetus*-infected bulls are not worth treating and that there is no effective treatment for this condition in the female; also with the definite statement that this infection is transmissible non-venereally. No mention is made of brucella infection, transmitted venereally, as a cause of infertility, nor of McDonald's important work on the causation of retained placenta. It seems improbable that hydrosalpinx is a rare condition, as van Rensburg states; it is common enough in Gt. Britain, while the affinity for the oviducts of the widely distributed virus of infectious epididymitis and vaginitis in S. Africa, would suggest an even higher incidence.—F. L. M. DAWSON.

FAULKNER, D. E. & EPSTEIN, H. (1957). The indigenous cattle of the British dependent territories in Africa. With material on certain other African countries. pp. xviii + 185. London: H. M. Stat. Off. 30s. [Colonial Advisory Council of Agriculture, Animal Health and Forestry Publ. No. 5.] 3077

A very good account of African cattle illustrated with maps and 119 photographs. For each type there are details of geographical distribution, environmental conditions, use, conformation and measurements, temperament, adaptability and future of type. Epstein has contributed a chapter on the origin and history of African breeds of cattle.—R.M.

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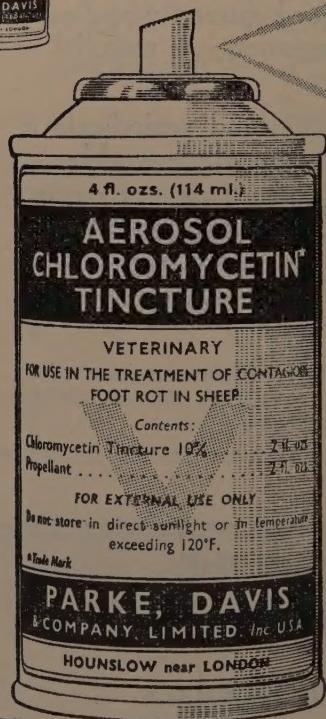
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